

## **APPENDIX F**

### **Traffic Memo**

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Level of Service Calculations are available on CD & City Website at:

<http://www.cityofsantacruz.com/government/city-departments/planning-and-community-development-2/environmental-documents>

## MEMORANDUM

To: Ron Powers, City of Santa Cruz

From: Frederik Venter, Reaa Ali, Kimley-Horn

Date: May 10, 2017

Subject: **Santa Cruz Downtown Recovery Plan Amendment – Traffic Study**

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This memorandum contains the traffic analysis for the Downtown Recovery Plan Project (Project), located in the City of Santa Cruz Downtown area. The objective of this project is to evaluate the traffic and circulation impacts of increasing the building densities and land use changes in Downtown Santa Cruz. The study area bounded by the San Lorenzo River, Soquel Avenue in the north, Laurel Street in the south, and the first block immediately west of Pacific Avenue. The Pacific Avenue portion of the study area is bounded by Cathcart Street on the north and Laurel Street on the south. The Front Street portion of the study area is bounded by Soquel Avenue on the north and Laurel Street on the south. The study area is divided into three areas defined as Areas X, Y, and Z for traffic assignment and analysis purposes. **Figure 1** shows the Study Area.

The traffic analysis contained in this memorandum evaluates the addition of the Downtown Recovery Plan Specific Plan to the existing conditions and cumulative conditions. This memorandum discusses the results of the traffic volumes and LOS developed for the following development scenarios and peak periods:

1. Existing (AM and PM)
2. Existing plus Project (AM and PM)
3. Cumulative plus Project (PM only) – The City General Plan was only developed for the PM peak hour, which represents the worst-case analysis. The PM peak hour volumes are typically higher in the PM compared to the AM peak hour.

The following intersections are included in the study:

1. Front Street and Laurel Street
2. Pacific Avenue and Laurel Street
3. Front Street and Cathcart Street
4. Front Street and Metro Station Access
5. Pacific Avenue and Metro Station Access
6. Pacific Avenue and Maple Street
7. Pacific Avenue and Front Street/Mission-Water Street
8. Front Street and Soquel Avenue
9. Pacific Avenue and Cathcart Street
10. Soquel Avenue and Pacific Avenue
11. Ocean Street and Water Street
12. Highway 1 and Highway 9
13. Chestnut Street and Mission Street



## TRAFFIC VOLUMES/DATA COLLECTION

Intersection turning movement counts were collected for the AM (7:00 am – 9:00 am) and PM (4:00 pm – 6:00 pm) peak periods during the weekday when local schools were in session. Some data previously available was also used in the technical analysis. Previously available data was utilized for Intersections 1, 2, 3, 4, 8, and 11. The traffic counts for these intersections were collected on Thursday, May 22, 2014. For intersections 5, 6, 7, 9, 10, 12, and 13, data collection was conducted on Tuesday, November 17, 2015.

Cumulative conditions volumes were obtained from the City of Santa Cruz 2030 General Plan (GP) (PM peak hour only). This development scenario accounts for growth per the General Plan including growth for the University of Santa Cruz and also newer approved projects in and around the downtown area which were not reflected in the GP. The latter resulted in an approximate 5% increase in GP volumes at the study intersections.

## TRIP GENERATION

The number of trips anticipated to be generated by the proposed project were derived using trip generation rates obtained from Appendix C of the City's General Plan for the Downtown area. The proposed project is understood to consist of commercial, office, and residential (townhomes and apartments) land uses. Since the General Plan only specifies the daily and PM peak hour trip rates, the AM peak hour trip rates were calculated by applying the proportion of the AM peak hour trip rate to the daily rate for these land uses as found in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9<sup>th</sup> Edition*. The following land use codes (LU) from the ITE *Trip Generation Manual* were used: Shopping Center (LU 820) for commercial; General Office Building (LU 710) for office; Residential Condominium/Townhouse (LU 230) for townhomes; and Apartment (LU 220) for apartments.

Trip generation calculations were performed by study area – Area X, Y, and Z of the project, and include a 40% trip reduction for mixed use development in the Downtown Area. The reductions are generated by proximity to the Transit center, mixed use development and, bicycle use and walking trips. The area also proposes added parking in downtown. Additional trips were assumed to be generated by the parking structure as indicated in the trip generation table. The added trips were based on the anticipated parking spaces that would not be utilized by the new land uses in the DRP and accounted for approximately 20% of the spaces at 85% parking occupancy, which is conservative. The anticipated trip generation characteristics for the proposed project are depicted in **Table 1**.

The proposed project trips were distributed on the transportation network based on distribution percentages provided by the City of Santa Cruz. **Figure 2** shows the in and out percent distribution near the project. The resulting AM and PM peak-hour traffic volumes attributed to the proposed project are illustrated in **Figure 3**.

Table 1. Project Trip Generation

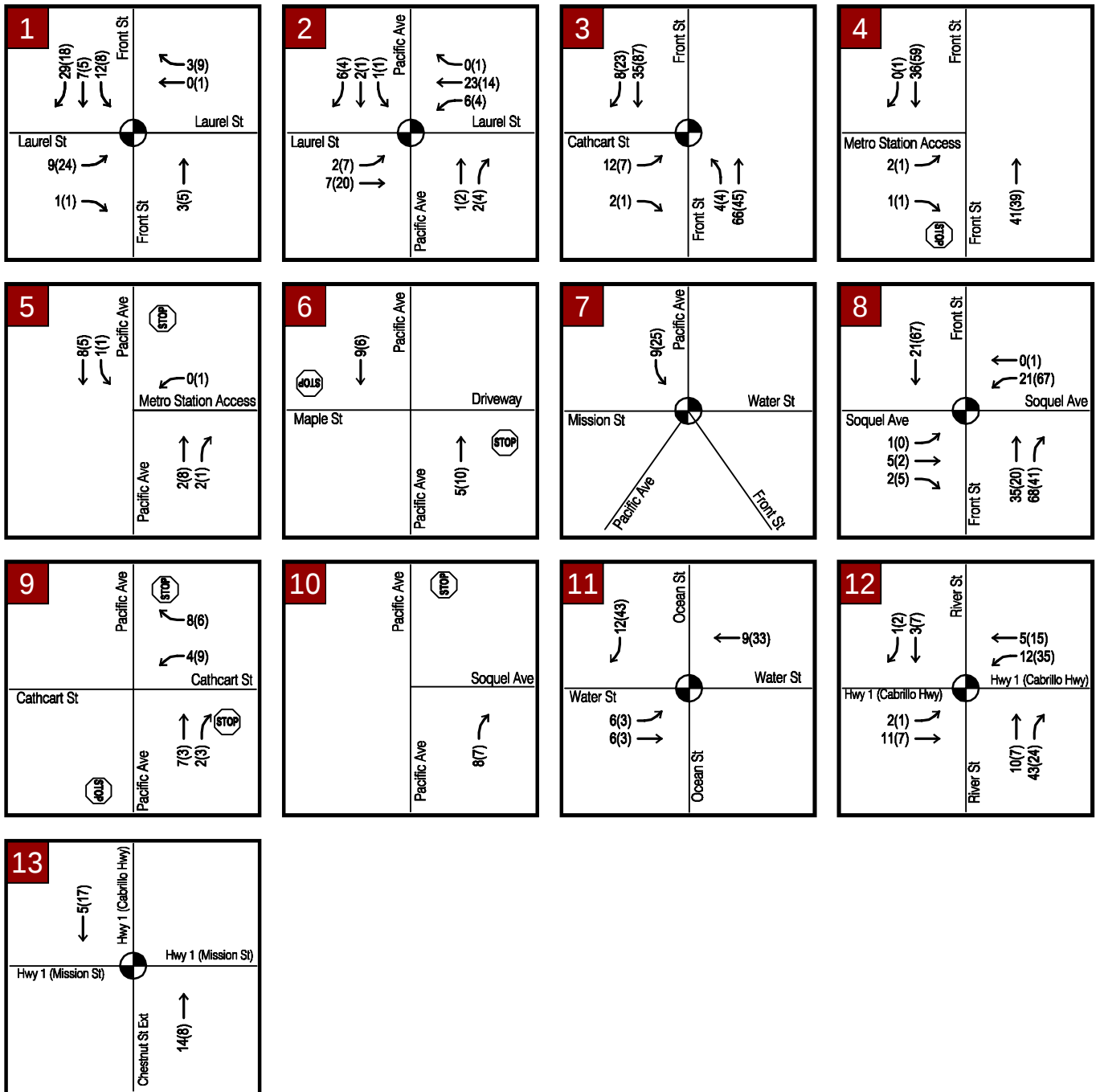
| Land Uses                                                                                    | Project Size <sup>6</sup> |                  | WEEKDAY     | AM PEAK HOUR <sup>2</sup> |          |      |   | PM PEAK HOUR |                 |          |      |   |      |
|----------------------------------------------------------------------------------------------|---------------------------|------------------|-------------|---------------------------|----------|------|---|--------------|-----------------|----------|------|---|------|
|                                                                                              |                           |                  | Daily Trips | Total Peak Hour           | % Of ADT | IN   | / | OUT          | Total Peak Hour | % Of ADT | IN   | / | OUT  |
| City of Santa Cruz General Plan 2030 Future City Buildout Trip Generation Rates <sup>1</sup> |                           |                  |             |                           |          |      |   |              |                 |          |      |   |      |
| Commercial                                                                                   |                           | 1,000 Sq Ft      | 44.32       | 1.00                      | 2%       | 62%  | / | 38%          | 2.71            | 6%       | 44%  | / | 56%  |
| Office                                                                                       |                           | 1,000 Sq Ft      | 11.01       | 1.56                      | 14%      | 88%  | / | 12%          | 1.49            | 14%      | 17%  | / | 83%  |
| Townhomes <sup>3</sup>                                                                       |                           | Dwelling Unit(s) | 7.50        | 0.51                      | 7%       | 22%  | / | 78%          | 0.62            | 8%       | 65%  | / | 35%  |
| Apartments                                                                                   |                           | Dwelling Unit(s) | 6.65        | 0.51                      | 8%       | 20%  | / | 80%          | 0.62            | 9%       | 65%  | / | 35%  |
| Trips Generated                                                                              |                           |                  |             |                           |          |      |   |              |                 |          |      |   |      |
| Area X - Riverfront                                                                          |                           |                  |             |                           |          |      |   |              |                 |          |      |   |      |
| Commercial                                                                                   | 11.171                    | 1,000 Sq Ft      | 496         | 11                        |          | 7    | / | 4            | 30              |          | 13   | / | 17   |
| Office                                                                                       | 18.296                    | 1,000 Sq Ft      | 202         | 29                        |          | 26   | / | 3            | 27              |          | 5    | / | 22   |
| Townhomes                                                                                    | 321                       | Dwelling Unit(s) | 2,408       | 164                       |          | 36   | / | 128          | 199             |          | 129  | / | 70   |
| Apartments                                                                                   | 0                         | Dwelling Unit(s) | 0           | 0                         |          | 0    | / | 0            | 0               |          | 0    | / | 0    |
| Total Area X Trips                                                                           |                           |                  | 3,106       | 204                       |          | 69   | / | 135          | 256             |          | 147  | / | 109  |
| 40% Reduction for Downtown Area <sup>4</sup>                                                 |                           |                  | (1,242)     | (82)                      |          | (28) | / | (54)         | (102)           |          | (59) | / | (44) |
| Net Area X Trips                                                                             |                           |                  | 1,864       | 122                       |          | 41   | / | 81           | 154             |          | 88   | / | 65   |
| Area Y - E. Pacific/W. Front Pacific Station                                                 |                           |                  |             |                           |          |      |   |              |                 |          |      |   |      |
| Commercial                                                                                   | (27.864)                  | 1,000 Sq Ft      | (1,236)     | (28)                      |          | (17) | / | (11)         | (76)            |          | (33) | / | (43) |
| Office                                                                                       | (16.105)                  | 1,000 Sq Ft      | (178)       | (25)                      |          | (22) | / | (3)          | (24)            |          | (4)  | / | (20) |
| Townhomes                                                                                    | 0                         | Dwelling Unit(s) | 0           | 0                         |          | 0    | / | 0            | 0               |          | 0    | / | 0    |
| Apartments                                                                                   | 370                       | Dwelling Unit(s) | 2,462       | 189                       |          | 38   | / | 151          | 229             |          | 149  | / | 80   |
| Total Area Y Trips                                                                           |                           |                  | 1,048       | 136                       |          | (1)  | / | 137          | 129             |          | 112  | / | 17   |
| 40% Reduction for Downtown Area <sup>4</sup>                                                 |                           |                  | (419)       | (54)                      |          | 0    | / | (55)         | (52)            |          | (45) | / | (7)  |
| Parking Garage Added Trips <sup>5</sup>                                                      |                           |                  |             | 26                        |          | 20   | / | 6            | 52              |          | 26   | / | 26   |
| Net Area Y Trips                                                                             |                           |                  | 629         | 108                       |          | 19   | / | 88           | 129             |          | 93   | / | 36   |
| Area Z - W. Pacific                                                                          |                           |                  |             |                           |          |      |   |              |                 |          |      |   |      |
| Commercial                                                                                   | 2                         | 1,000 Sq Ft      | 90          | 2                         |          | 1    | / | 1            | 5               |          | 2    | / | 3    |
| Office                                                                                       | 0                         | 1,000 Sq Ft      | 0           | 0                         |          | 0    | / | 0            | 0               |          | 0    | / | 0    |
| Townhomes                                                                                    | 0                         | Dwelling Unit(s) | 0           | 0                         |          | 0    | / | 0            | 0               |          | 0    | / | 0    |
| Apartments                                                                                   | 20                        | Dwelling Unit(s) | 134         | 10                        |          | 2    | / | 8            | 12              |          | 8    | / | 4    |
| Total Area Z Trips                                                                           |                           |                  | 224         | 12                        |          | 3    | / | 9            | 17              |          | 10   | / | 7    |
| 40% Reduction for Downtown Area <sup>4</sup>                                                 |                           |                  | (90)        | (5)                       |          | (1)  | / | (4)          | (7)             |          | (4)  | / | (3)  |
| Net Area Z Trips                                                                             |                           |                  | 134         | 7                         |          | 2    | / | 5            | 10              |          | 6    | / | 4    |
| Total New Downtown Recovery Plan Buildout Trips                                              |                           |                  | 2,627       | 237                       |          | 63   | / | 174          | 293             |          | 188  | / | 106  |

**Notes:**

1. Trip generation rates obtained from Appendix C of the City of Santa Cruz General Plan 2030 Draft EIR, September 2011.
2. The AM Peak Hour rates for Commercial, Office, Townhomes, and Apartment uses was calculated by applying the proportion of the AM peak hour rate to the daily rate for Shopping Center (LUC 820), General Office Building (LUC 710), Residential Condominium/Townhouse (LU 230), and Apartment (LUC 220), respectively. The in/out percentages for the uses were obtained from these same ITE LUCs.
3. ITE Land Use 270 Rates used for Townhomes per City direction (email correspondence with Ron Marquez dated 04/22/16).
4. 40% Reduction for mixed use development in Downtown Santa Cruz per City direction (email correspondence with Ron Marquez dated 04/22/16).
5. Required parking per City Code= 414+880+871=2,165 spaces. With 20% reduction=1,732, so 259 additional spaces (1,991-1,732) that will generate traffic. 10% in the AM peak = 26 trips, 20% in the PM peak = 52 trips.
6. Total project size can be obtained by calculating the sum of each land use for Area X, Area Y, and Area Z.  
 Commercial land use = 11,171 sf + (-27,864 sf) + 2,000 sf = -14,693 sf  
 Office land use = 18,296 sf + (-16,105 sf) + 0 sf = +2,191 sf  
 Residential land use = 321 units + 370 units + 20 units = +711 units



# APPENDIX F



| LEGEND                                                        |                          |
|---------------------------------------------------------------|--------------------------|
| <span style="border: 1px solid black; padding: 2px;">X</span> | INTERSECTION #           |
|                                                               | TRAFFIC SIGNAL           |
|                                                               | STOP SIGN                |
| XX(X)                                                         | AM(PM) PEAK HOUR VOLUMES |

## TRAFFIC IMPACT ANALYSIS METHODOLOGY

Consistent with the City of Santa Cruz TIA Guidelines, the concept of Level of Service (LOS) is utilized to analyze both the signalized and unsignalized study intersections. The LOS of a transportation facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. As defined in Section 4.4 of the City of Santa Cruz 2030 General Plan Draft EIR, the City of Santa Cruz has established LOS D as the minimum acceptable LOS for overall intersection operations during weekday AM and PM peak hours. However, due to environmental, economic, and/or feasibility constraints with implementing improvements at certain major regional intersections, the City accepts a lower LOS at these locations under the current General Plan per existing Circulation Policy 5.1.2. The threshold for each study intersection is specified in the LOS analysis tables below.

Intersection Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 2010 and 2000 (HCM)*, and appropriate traffic analysis software. The *HCM* includes procedures for analyzing side-street stop controlled (SASS), all-way stop controlled (AWSC), and signalized intersections and *HCM 2010* uses multimodal analysis principles (bicycle and pedestrians). The SASS procedure defines LOS as a function of average control delay for each minor street approach movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the intersection. *HCM 2010* was used for all intersections except for Intersection 7 due to the presence of a fifth approach at this location, which *HCM 2010* cannot analyze correctly and *HCM 2000* was used to analyze this study intersection.

**EXISTING AND EXISTING PLUS PROJECT CONDITIONS**

Traffic volumes for Existing conditions were obtained from traffic counts. Peak-hour traffic associated with the proposed Downtown Recovery Plan amendments was added to the Existing traffic volumes to generate traffic volumes for Existing plus Project conditions.

**Figures 4 and 5** show the volumes at the study intersections under Existing and Existing plus Project conditions.

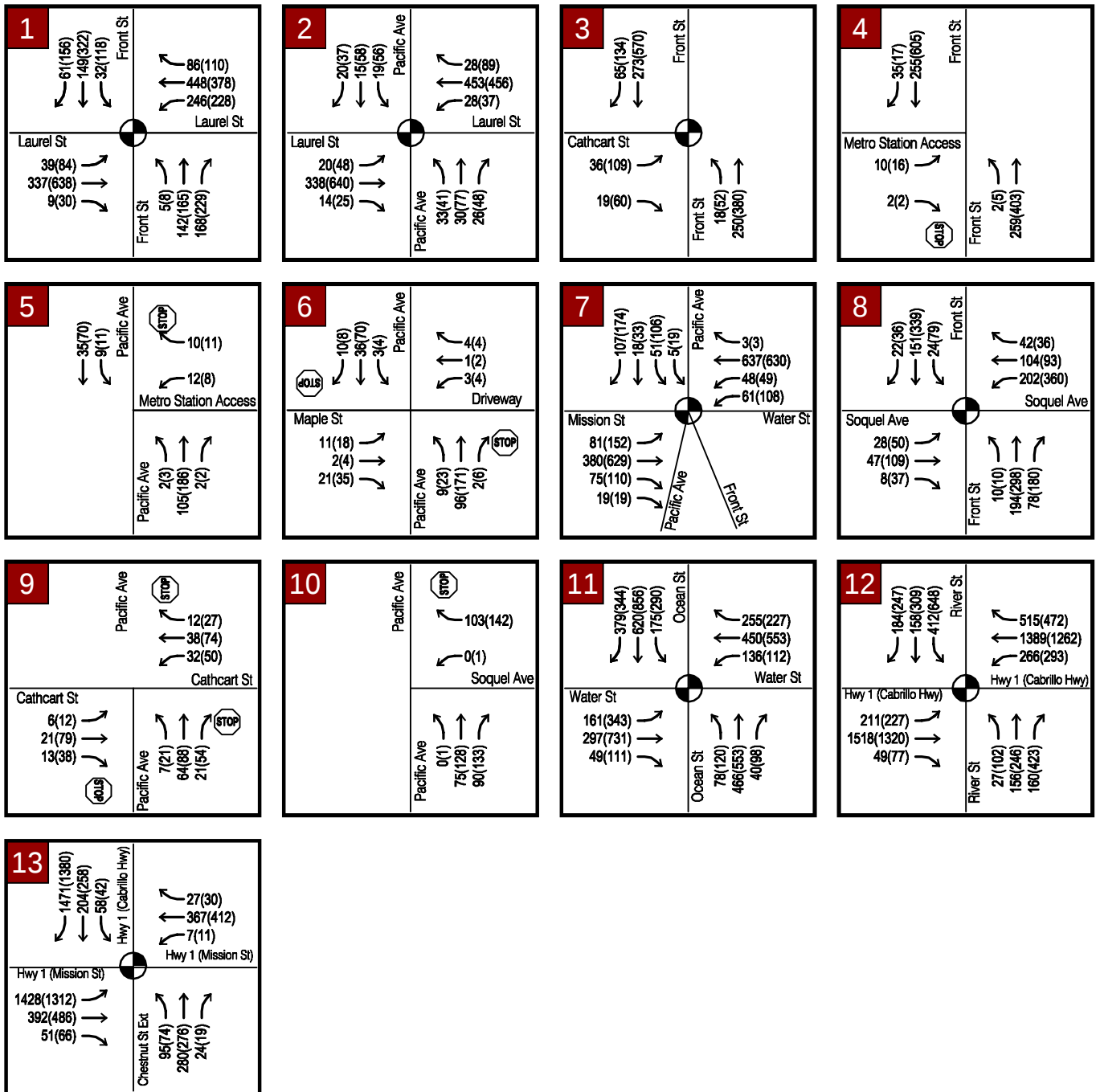
**Table 2** below presents the peak-hour intersection operating conditions for the Existing and Existing plus Project development scenarios.

As indicated in **Table 2**, the study intersections operate at LOS A through LOS F under Existing conditions and with the addition of project traffic during the AM and PM peak hours. The addition of project trips does not worsen the LOS at the study intersections lower than the minimum acceptable LOS except at the following intersection.

Intersection #12, Highway 1/Highway 9, is currently operating at LOS E and would continue to operate at LOS E with the addition of the project.

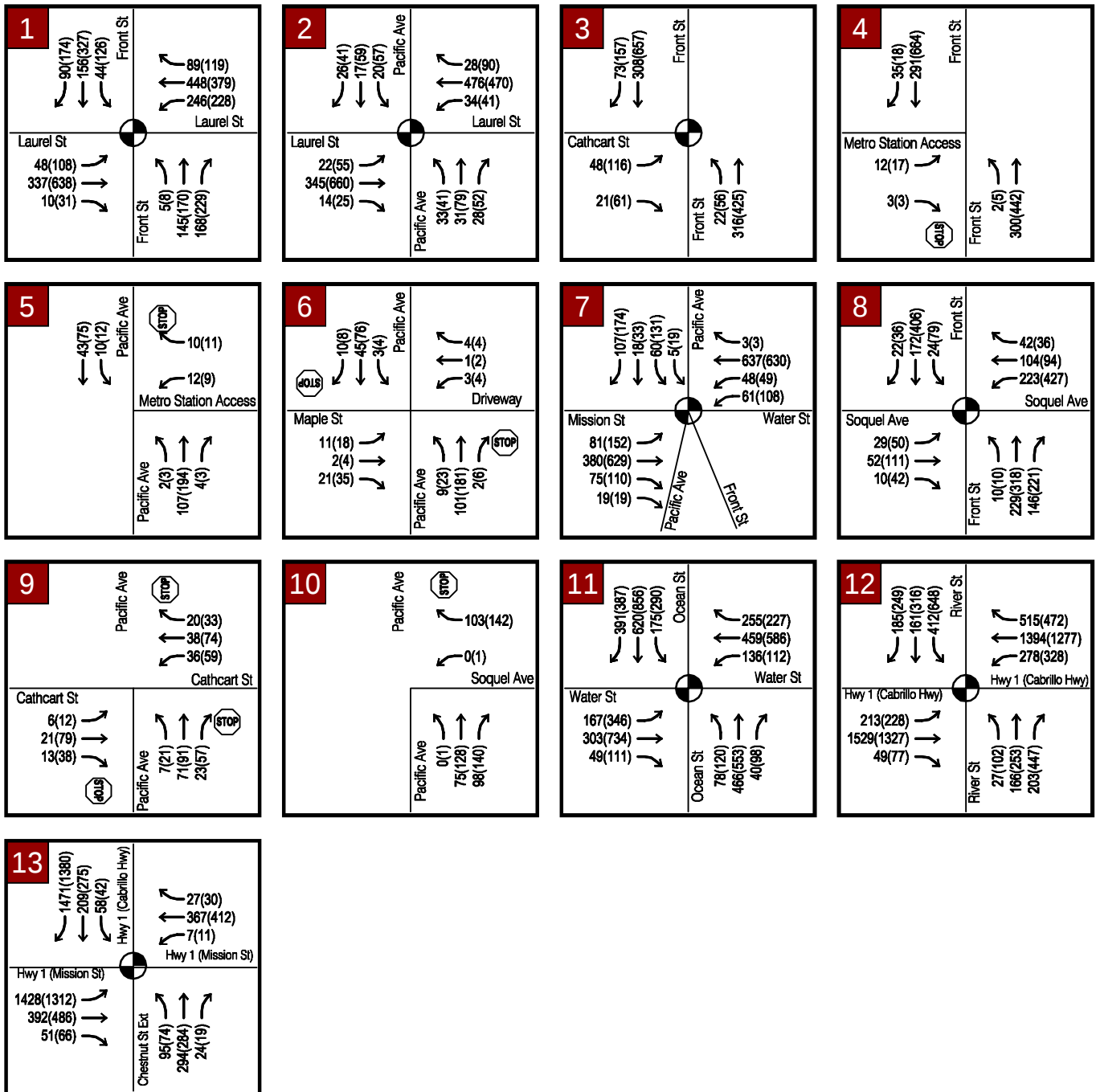
Intersection #13, Chestnut Street/Mission Street, is currently operating at LOS F in the AM peak hour and LOS E in the PM peak hour, and would continue to operate at these conditions with the addition of the project.

# APPENDIX F



| LEGEND |                          |
|--------|--------------------------|
| X      | INTERSECTION #           |
|        | TRAFFIC SIGNAL           |
|        | STOP SIGN                |
| XX(XX) | AM(PM) PEAK HOUR VOLUMES |

# APPENDIX F



| LEGEND |                          |
|--------|--------------------------|
|        | INTERSECTION #           |
|        | TRAFFIC SIGNAL           |
|        | STOP SIGN                |
| XX(X)  | AM(PM) PEAK HOUR VOLUMES |

Table 2. Existing and Existing plus Project Conditions Levels of Service

| #  | Intersection                                         | Control Type   | City of Santa Cruz Threshold <sup>2</sup> | Existing Conditions <sup>1</sup> |                    |          |              |                    |          | Existing Plus Project Conditions <sup>1</sup> |                    |          |              |                    |          |
|----|------------------------------------------------------|----------------|-------------------------------------------|----------------------------------|--------------------|----------|--------------|--------------------|----------|-----------------------------------------------|--------------------|----------|--------------|--------------------|----------|
|    |                                                      |                |                                           | AM Peak Hour                     |                    |          | PM Peak Hour |                    |          | AM Peak Hour                                  |                    |          | PM Peak Hour |                    |          |
|    |                                                      |                |                                           | Movement                         | Delay <sup>3</sup> | LOS      | Movement     | Delay <sup>3</sup> | LOS      | Movement                                      | Delay <sup>3</sup> | LOS      | Movement     | Delay <sup>3</sup> | LOS      |
| 1  | Front Street / Laurel Street                         | Signal         | D                                         | Overall                          | 26.4               | C        | Overall      | 30.8               | C        | Overall                                       | 27.2               | C        | Overall      | 31.2               | C        |
| 2  | Pacific Avenue / Laurel Street                       | Signal         | D                                         | Overall                          | 14.5               | B        | Overall      | 17.9               | B        | Overall                                       | 15.0               | B        | Overall      | 18.5               | B        |
| 3  | Front Street / Cathcart Street                       | Signal         | D                                         | Overall                          | 16.2               | B        | Overall      | 19.0               | B        | Overall                                       | 16.2               | B        | Overall      | 18.9               | B        |
| 4  | Front Street / Metro Station Access                  | Signal         | D                                         | Overall                          | 5.3                | A        | Overall      | 4.9                | A        | Overall                                       | 6.0                | A        | Overall      | 5.1                | A        |
| 5  | Pacific Avenue / Metro Station Access                | SSSC           | D                                         | Overall                          | 1.7                | A        | Overall      | 1.1                | A        | Overall                                       | 1.6                | A        | Overall      | 1.1                | A        |
|    |                                                      | Worst Approach | D                                         | WB                               | 9.5                | A        | WB           | 11.4               | B        | WB                                            | 9.6                | A        | WB           | 11.6               | B        |
| 6  | Pacific Avenue / Maple Street                        | AWSC           | D                                         | Overall                          | 7.6                | A        | Overall      | 8.1                | A        | Overall                                       | 7.7                | A        | Overall      | 8.2                | A        |
| 7  | Pacific Avenue / Front Street / Mission-Water Street | Signal         | D                                         | Overall                          | 17.7               | B        | Overall      | 20.2               | C        | Overall                                       | 17.7               | B        | Overall      | 21.1               | C        |
| 8  | Front Street / Soquel Avenue                         | Signal         | D                                         | Overall                          | 18.6               | B        | Overall      | 21.9               | C        | Overall                                       | 19.2               | B        | Overall      | 23.1               | C        |
| 9  | Pacific Avenue / Cathcart Street                     | AWSC           | D                                         | Overall                          | 8.0                | A        | Overall      | 8.8                | A        | Overall                                       | 8.1                | A        | Overall      | 8.9                | A        |
| 10 | Soquel Avenue / Pacific Avenue                       | SSSC           | D                                         | Overall                          | 3.7                | A        | Overall      | 3.6                | A        | Overall                                       | 3.6                | A        | Overall      | 3.6                | A        |
|    |                                                      | Worst Approach | D                                         | WB                               | 9.6                | A        | WB           | 10.3               | B        | WB                                            | 9.7                | A        | WB           | 10.3               | B        |
| 11 | Ocean Street / Water Street                          | Signal         | F                                         | Overall                          | 22.6               | C        | Overall      | 35.3               | D        | Overall                                       | 22.8               | C        | Overall      | 35.6               | D        |
| 12 | Highway 1 / Highway 9                                | Signal         | F                                         | Overall                          | <b>58.0</b>        | <b>E</b> | Overall      | <b>71.7</b>        | <b>E</b> | Overall                                       | <b>59.5</b>        | <b>E</b> | Overall      | <b>74.1</b>        | <b>E</b> |
| 13 | Chestnut Street / Mission Street                     | Signal         | F                                         | Overall                          | <b>140.9</b>       | <b>F</b> | Overall      | <b>74.1</b>        | <b>E</b> | Overall                                       | <b>140.4</b>       | <b>F</b> | Overall      | <b>73.8</b>        | <b>E</b> |

## Notes:

- Analysis performed using HCM 2010 methodologies, except for Intersection 7 where HCM 2000 methodology was applied.
- The City of Santa Cruz has established LOS D as the minimum acceptable LOS for overall intersection operations during the AM and PM peak hours. However, under the existing General Plan, the City accepts a lower LOS (F) at some major regional intersections per existing Circulation Policy 5.1.2.
- Delay indicated in seconds/vehicle.
- Intersections that fall below City standard are shown in **bold**.

## CUMULATIVE PLUS PROJECT CONDITIONS

Peak-hour traffic volumes for Cumulative conditions were obtained from the City of Santa Cruz 2030 General Plan and include the growth anticipated by the University of Santa Cruz. These volumes were increased by an additional 5% at all approaches except at the bus driveways to account for other currently planned projects not envisioned in the General Plan Environmental Impact Report.

**Figure 6** shows the traffic volumes at the study intersections under this development scenario. Planned improvements, included in the City Traffic Impact Fee Program, was assumed to be constructed for GP scenario analysis.

Peak-hour traffic associated with the proposed Downtown Recovery Plan amendments was added to the Cumulative traffic volumes and Levels of Service were determined at the study intersections.

**Table 3** presents the peak-hour intersection operating conditions for this analysis scenario.

As indicated in **Table 3**, the study intersections operate at LOS A through LOS F during the PM peak hour.

- Intersection #1, Front Street and Laurel Street, would fail in the PM peak hour
- Intersection #2, Pacific Avenue and Laurel Street, would fail in the PM peak hour
- Intersection #8, Front Street and Soquel Avenue, would fail in the PM peak hour
- Intersection #11, Ocean Street and Water Street, would fail in the PM peak hour
- Intersection #12, Highway 1/Highway 9, would fail in the PM peak hour
- Intersection #13, Chestnut Street/Mission Street, would fail in the PM peak hour.

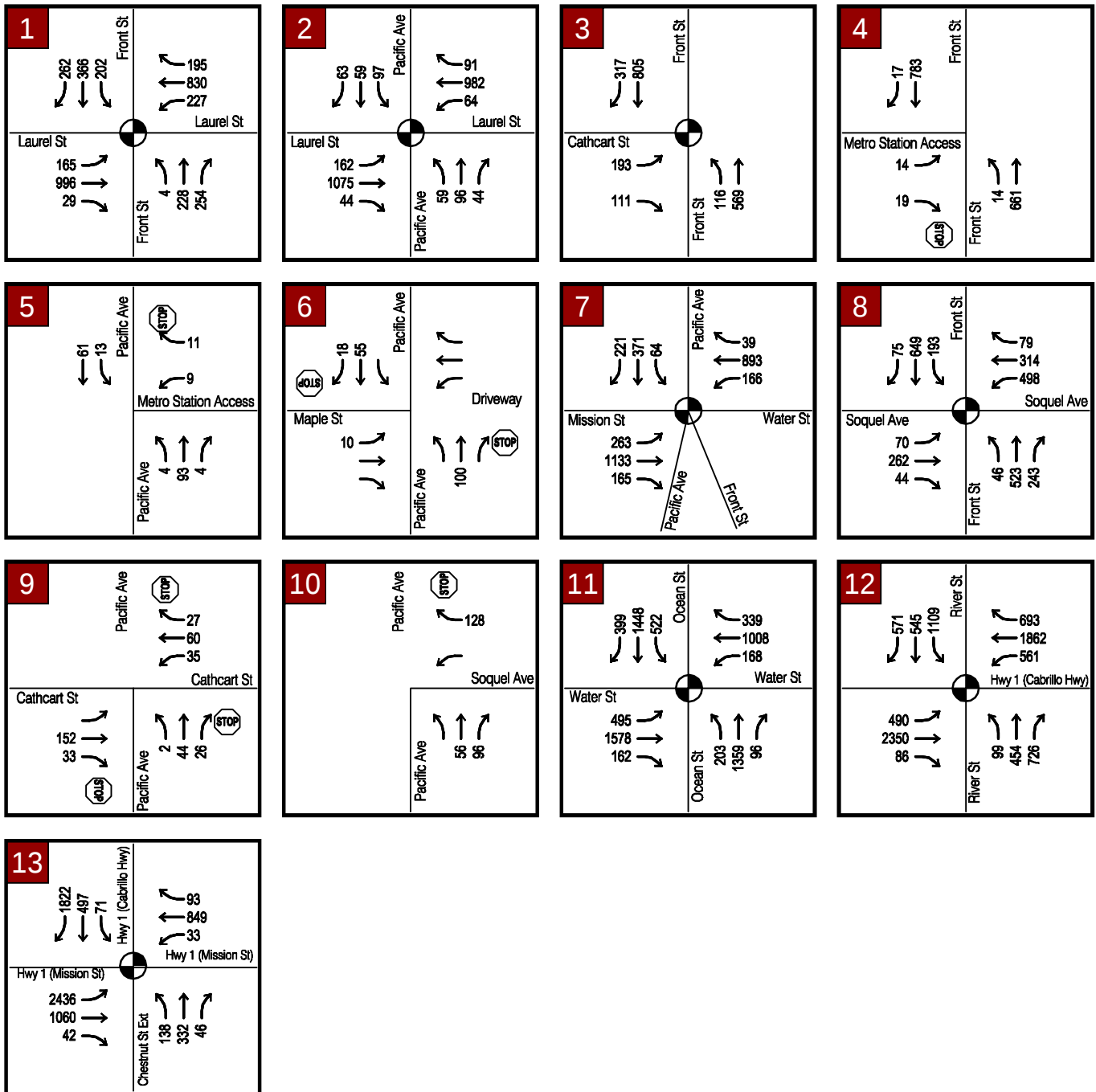
**Table 3.** Cumulative plus Project Conditions Levels of Service

| #  | Intersection                                         | Control Type          | City of Santa Cruz Threshold <sup>2</sup> | Cumulative Plus Project Conditions <sup>1</sup> |                    |          |
|----|------------------------------------------------------|-----------------------|-------------------------------------------|-------------------------------------------------|--------------------|----------|
|    |                                                      |                       |                                           | PM Peak Hour                                    |                    |          |
|    |                                                      |                       |                                           | Movement                                        | Delay <sup>3</sup> | LOS      |
| 1  | Front Street / Laurel Street                         | Signal                | D                                         | Overall                                         | <b>100.2</b>       | <b>F</b> |
| 2  | Pacific Avenue / Laurel Street                       | Signal                | D                                         | Overall                                         | <b>105.9</b>       | <b>F</b> |
| 3  | Front Street / Cathcart Street                       | Signal                | D                                         | Overall                                         | 23.5               | C        |
| 4  | Front Street / Metro Station Access                  | Signal                | D                                         | Overall                                         | 6.4                | A        |
| 5  | Pacific Avenue / Metro Station Access                | SSSC                  | D                                         | Overall                                         | 1.7                | A        |
|    |                                                      | <i>Worst Approach</i> | D                                         | WB                                              | 10.5               | B        |
| 6  | Pacific Avenue / Maple Street                        | AWSC                  | D                                         | Overall                                         | 7.7                | A        |
| 7  | Pacific Avenue / Front Street / Mission-Water Street | Signal                | D                                         | Overall                                         | 32.3               | C        |
| 8  | Front Street / Soquel Avenue                         | Signal                | D                                         | Overall                                         | <b>59.9</b>        | <b>E</b> |
| 9  | Pacific Avenue / Cathcart Street                     | AWSC                  | D                                         | Overall                                         | 8.3                | A        |
| 10 | Soquel Avenue / Pacific Avenue                       | SSSC                  | D                                         | Overall                                         | 4.3                | A        |
|    |                                                      | <i>Worst Approach</i> | D                                         | WB                                              | 9.5                | A        |
| 11 | Ocean Street / Water Street                          | Signal                | F                                         | Overall                                         | <b>228.1</b>       | <b>F</b> |
| 12 | Highway 1 / Highway 9                                | Signal                | F                                         | Overall                                         | <b>269.2</b>       | <b>F</b> |
| 13 | Chestnut Street / Mission Street                     | Signal                | F                                         | Overall                                         | <b>344.0</b>       | <b>F</b> |

## Notes:

1. Analysis performed using HCM 2010 methodologies, except for Intersection 7 where HCM 2000 methodology was applied.
2. The City of Santa Cruz has established LOS D as the minimum acceptable LOS for overall intersection operations during the AM and PM peak hours. However, under the existing General Plan, the City accepts a lower LOS (F) at some major regional intersections per existing Circulation Policy 5.1.2.
3. Delay indicated in seconds/vehicle.
4. Intersection geometry under cumulative plus project conditions was improved at the following intersections per modifications noted under the City's Capital Improvement Projects list: Highway 1 & Highway 9; Ocean Street & Water Street; and Chestnut Street and Mission Street.
5. Intersections that fall below City standard are shown in **bold**.

# APPENDIX F



| LEGEND |                      |
|--------|----------------------|
|        | INTERSECTION #       |
|        | TRAFFIC SIGNAL       |
|        | STOP SIGN            |
| XX     | PM PEAK HOUR VOLUMES |



**APPENDICES**

**Appendix A.** Synchro Analysis Reports

**Appendix B.** Synchro Timing Reports



**Appendix A**  
Synchro Analysis Reports

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing  
AM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 39                                                                                | 337                                                                               | 9                                                                                 | 246                                                                               | 448                                                                               | 86                                                                                | 5                                                                                   | 142                                                                                 | 168                                                                                 | 32                                                                                  | 149                                                                                 | 61                                                                                  |
| Future Volume (veh/h)        | 39                                                                                | 337                                                                               | 9                                                                                 | 246                                                                               | 448                                                                               | 86                                                                                | 5                                                                                   | 142                                                                                 | 168                                                                                 | 32                                                                                  | 149                                                                                 | 61                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1810                                                                              | 1853                                                                              | 1900                                                                              | 1845                                                                              | 1863                                                                              | 1845                                                                              | 1583                                                                                | 1827                                                                                | 1881                                                                                | 1743                                                                                | 1827                                                                                | 1792                                                                                |
| Adj Flow Rate, veh/h         | 42                                                                                | 366                                                                               | 10                                                                                | 267                                                                               | 487                                                                               | 93                                                                                | 5                                                                                   | 154                                                                                 | 183                                                                                 | 35                                                                                  | 162                                                                                 | 66                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 5                                                                                 | 2                                                                                 | 2                                                                                 | 3                                                                                 | 2                                                                                 | 3                                                                                 | 20                                                                                  | 4                                                                                   | 1                                                                                   | 9                                                                                   | 4                                                                                   | 6                                                                                   |
| Cap, veh/h                   | 375                                                                               | 1466                                                                              | 40                                                                                | 317                                                                               | 710                                                                               | 597                                                                               | 8                                                                                   | 285                                                                                 | 249                                                                                 | 46                                                                                  | 326                                                                                 | 272                                                                                 |
| Arrive On Green              | 0.22                                                                              | 0.42                                                                              | 0.42                                                                              | 0.18                                                                              | 0.38                                                                              | 0.38                                                                              | 0.01                                                                                | 0.16                                                                                | 0.16                                                                                | 0.03                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1723                                                                              | 3501                                                                              | 95                                                                                | 1757                                                                              | 1863                                                                              | 1568                                                                              | 1508                                                                                | 1827                                                                                | 1599                                                                                | 1660                                                                                | 1827                                                                                | 1524                                                                                |
| Grp Volume(v), veh/h         | 42                                                                                | 184                                                                               | 192                                                                               | 267                                                                               | 487                                                                               | 93                                                                                | 5                                                                                   | 154                                                                                 | 183                                                                                 | 35                                                                                  | 162                                                                                 | 66                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1723                                                                              | 1760                                                                              | 1836                                                                              | 1757                                                                              | 1863                                                                              | 1568                                                                              | 1508                                                                                | 1827                                                                                | 1599                                                                                | 1660                                                                                | 1827                                                                                | 1524                                                                                |
| Q Serve(g_s), s              | 1.4                                                                               | 5.0                                                                               | 5.0                                                                               | 10.8                                                                              | 16.1                                                                              | 2.9                                                                               | 0.2                                                                                 | 5.7                                                                                 | 8.0                                                                                 | 1.5                                                                                 | 5.9                                                                                 | 2.7                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 5.0                                                                               | 5.0                                                                               | 10.8                                                                              | 16.1                                                                              | 2.9                                                                               | 0.2                                                                                 | 5.7                                                                                 | 8.0                                                                                 | 1.5                                                                                 | 5.9                                                                                 | 2.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.05                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 375                                                                               | 737                                                                               | 769                                                                               | 317                                                                               | 710                                                                               | 597                                                                               | 8                                                                                   | 285                                                                                 | 249                                                                                 | 46                                                                                  | 326                                                                                 | 272                                                                                 |
| V/C Ratio(X)                 | 0.11                                                                              | 0.25                                                                              | 0.25                                                                              | 0.84                                                                              | 0.69                                                                              | 0.16                                                                              | 0.63                                                                                | 0.54                                                                                | 0.73                                                                                | 0.76                                                                                | 0.50                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 375                                                                               | 737                                                                               | 769                                                                               | 502                                                                               | 710                                                                               | 597                                                                               | 82                                                                                  | 398                                                                                 | 348                                                                                 | 90                                                                                  | 398                                                                                 | 332                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 23.0                                                                              | 13.9                                                                              | 13.9                                                                              | 29.1                                                                              | 19.1                                                                              | 15.0                                                                              | 36.5                                                                                | 28.6                                                                                | 29.6                                                                                | 35.5                                                                                | 27.2                                                                                | 25.9                                                                                |
| Incr Delay (d2), s/veh       | 0.6                                                                               | 0.8                                                                               | 0.8                                                                               | 7.4                                                                               | 5.3                                                                               | 0.6                                                                               | 60.5                                                                                | 1.6                                                                                 | 4.9                                                                                 | 22.0                                                                                | 1.2                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 2.6                                                                               | 2.7                                                                               | 5.8                                                                               | 9.3                                                                               | 1.3                                                                               | 0.2                                                                                 | 3.0                                                                                 | 3.9                                                                                 | 1.0                                                                                 | 3.1                                                                                 | 1.2                                                                                 |
| LnGrp Delay(d),s/veh         | 23.7                                                                              | 14.7                                                                              | 14.7                                                                              | 36.5                                                                              | 24.4                                                                              | 15.5                                                                              | 97.0                                                                                | 30.2                                                                                | 34.5                                                                                | 57.5                                                                                | 28.4                                                                                | 26.4                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 418                                                                               |                                                                                   |                                                                                   | 847                                                                               |                                                                                   |                                                                                     | 342                                                                                 |                                                                                     |                                                                                     | 263                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 15.6                                                                              |                                                                                   |                                                                                   | 27.2                                                                              |                                                                                   |                                                                                     | 33.5                                                                                |                                                                                     |                                                                                     | 31.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.2                                                                              | 34.8                                                                              | 4.4                                                                               | 17.1                                                                              | 20.0                                                                              | 32.0                                                                              | 6.0                                                                                 | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 21.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                              | 16.0                                                                              | 28.0                                                                              | 4.0                                                                                 | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.8                                                                              | 7.0                                                                               | 2.2                                                                               | 7.9                                                                               | 3.4                                                                               | 18.1                                                                              | 3.5                                                                                 | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 5.2                                                                               | 0.0                                                                               | 1.7                                                                               | 0.0                                                                               | 4.0                                                                               | 0.0                                                                                 | 1.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 26.4                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 2: Pacific Avenue & Laurel Street

|                             |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                    | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations         |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                   |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)      | 20                                                                                | 338                                                                               | 14                                                                                | 28                                                                                | 453                                                                               | 28                                                                                | 33                                                                                | 30                                                                                | 26                                                                                | 19                                                                                  | 15                                                                                  | 20                                                                                  |
| Future Volume (veh/h)       | 20                                                                                | 338                                                                               | 14                                                                                | 28                                                                                | 453                                                                               | 28                                                                                | 33                                                                                | 30                                                                                | 26                                                                                | 19                                                                                  | 15                                                                                  | 20                                                                                  |
| Number                      | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)         | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln      | 1520                                                                              | 1872                                                                              | 1900                                                                              | 1845                                                                              | 1862                                                                              | 1900                                                                              | 1900                                                                              | 1549                                                                              | 1900                                                                              | 1900                                                                                | 1630                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h        | 23                                                                                | 393                                                                               | 16                                                                                | 33                                                                                | 527                                                                               | 33                                                                                | 38                                                                                | 35                                                                                | 30                                                                                | 22                                                                                  | 17                                                                                  | 23                                                                                  |
| Adj No. of Lanes            | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor            | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %        | 25                                                                                | 1                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 13                                                                                | 13                                                                                | 13                                                                                  | 13                                                                                  | 13                                                                                  |
| Cap, veh/h                  | 85                                                                                | 946                                                                               | 38                                                                                | 103                                                                               | 918                                                                               | 57                                                                                | 446                                                                               | 181                                                                               | 156                                                                               | 160                                                                                 | 118                                                                                 | 121                                                                                 |
| Arrive On Green             | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h             | 1448                                                                              | 1786                                                                              | 73                                                                                | 1757                                                                              | 1734                                                                              | 109                                                                               | 1389                                                                              | 771                                                                               | 661                                                                               | 374                                                                                 | 501                                                                                 | 516                                                                                 |
| Grp Volume(v), veh/h        | 23                                                                                | 0                                                                                 | 409                                                                               | 33                                                                                | 0                                                                                 | 560                                                                               | 38                                                                                | 0                                                                                 | 65                                                                                | 62                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln    | 1448                                                                              | 0                                                                                 | 1859                                                                              | 1757                                                                              | 0                                                                                 | 1843                                                                              | 1389                                                                              | 0                                                                                 | 1432                                                                              | 1390                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s             | 1.0                                                                               | 0.0                                                                               | 9.0                                                                               | 1.2                                                                               | 0.0                                                                               | 14.0                                                                              | 0.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s       | 1.0                                                                               | 0.0                                                                               | 9.0                                                                               | 1.2                                                                               | 0.0                                                                               | 14.0                                                                              | 1.1                                                                               | 0.0                                                                               | 2.5                                                                               | 2.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 0.46                                                                              | 0.35                                                                                |                                                                                     | 0.37                                                                                |
| Lane Grp Cap(c), veh/h      | 85                                                                                | 0                                                                                 | 984                                                                               | 103                                                                               | 0                                                                                 | 975                                                                               | 446                                                                               | 0                                                                                 | 337                                                                               | 399                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                | 0.27                                                                              | 0.00                                                                              | 0.42                                                                              | 0.32                                                                              | 0.00                                                                              | 0.57                                                                              | 0.09                                                                              | 0.00                                                                              | 0.19                                                                              | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h       | 341                                                                               | 0                                                                                 | 984                                                                               | 413                                                                               | 0                                                                                 | 975                                                                               | 446                                                                               | 0                                                                                 | 337                                                                               | 399                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)          | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh    | 30.6                                                                              | 0.0                                                                               | 9.7                                                                               | 30.7                                                                              | 0.0                                                                               | 10.8                                                                              | 20.3                                                                              | 0.0                                                                               | 20.8                                                                              | 20.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh      | 1.7                                                                               | 0.0                                                                               | 1.3                                                                               | 1.8                                                                               | 0.0                                                                               | 2.5                                                                               | 0.4                                                                               | 0.0                                                                               | 1.3                                                                               | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln    | 0.5                                                                               | 0.0                                                                               | 4.9                                                                               | 0.6                                                                               | 0.0                                                                               | 7.7                                                                               | 0.6                                                                               | 0.0                                                                               | 1.1                                                                               | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh        | 32.3                                                                              | 0.0                                                                               | 10.9                                                                              | 32.4                                                                              | 0.0                                                                               | 13.3                                                                              | 20.7                                                                              | 0.0                                                                               | 22.1                                                                              | 21.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                   | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h         | 432                                                                               |                                                                                   |                                                                                   | 593                                                                               |                                                                                   |                                                                                   | 103                                                                               |                                                                                   |                                                                                   | 62                                                                                  |                                                                                     |                                                                                     |
| Approach Delay, s/veh       | 12.1                                                                              |                                                                                   |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 21.6                                                                              |                                                                                   |                                                                                   | 21.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Timer                       | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s    | 8.0                                                                               | 40.0                                                                              |                                                                                   | 20.0                                                                              | 8.0                                                                               | 40.0                                                                              |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s     | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s | 10.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              | 16.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I), s | 13.2                                                                              | 11.0                                                                              |                                                                                   | 4.2                                                                               | 3.0                                                                               | 16.0                                                                              |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s     | 0.0                                                                               | 7.0                                                                               |                                                                                   | 0.6                                                                               | 0.0                                                                               | 6.5                                                                               |                                                                                   | 0.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay         | 14.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Traffic Volume (veh/h)       | 36                                                                                | 19                                                                                | 18                                                                                | 250                                                                               | 273                                                                               | 65                                                                                |   |      |
| Future Volume (veh/h)        | 36                                                                                | 19                                                                                | 18                                                                                | 250                                                                               | 273                                                                               | 65                                                                                |   |      |
| Number                       | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1638                                                                              | 1810                                                                              | 1712                                                                              | 1743                                                                              | 1706                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h         | 41                                                                                | 22                                                                                | 21                                                                                | 287                                                                               | 314                                                                               | 75                                                                                |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              |   |      |
| Percent Heavy Veh, %         | 16                                                                                | 5                                                                                 | 11                                                                                | 9                                                                                 | 11                                                                                | 11                                                                                |   |      |
| Cap, veh/h                   | 440                                                                               | 434                                                                               | 345                                                                               | 1087                                                                              | 950                                                                               | 224                                                                               |   |      |
| Arrive On Green              | 0.28                                                                              | 0.28                                                                              | 0.21                                                                              | 0.62                                                                              | 0.36                                                                              | 0.36                                                                              |   |      |
| Sat Flow, veh/h              | 1560                                                                              | 1538                                                                              | 1630                                                                              | 1743                                                                              | 2690                                                                              | 613                                                                               |   |      |
| Grp Volume(v), veh/h         | 41                                                                                | 22                                                                                | 21                                                                                | 287                                                                               | 194                                                                               | 195                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1560                                                                              | 1538                                                                              | 1630                                                                              | 1743                                                                              | 1620                                                                              | 1598                                                                              |   |      |
| Q Serve(g_s), s              | 1.6                                                                               | 0.9                                                                               | 0.9                                                                               | 6.3                                                                               | 7.3                                                                               | 7.5                                                                               |   |      |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 0.9                                                                               | 0.9                                                                               | 6.3                                                                               | 7.3                                                                               | 7.5                                                                               |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.38                                                                              |   |      |
| Lane Grp Cap(c), veh/h       | 440                                                                               | 434                                                                               | 345                                                                               | 1087                                                                              | 591                                                                               | 583                                                                               |   |      |
| V/C Ratio(X)                 | 0.09                                                                              | 0.05                                                                              | 0.06                                                                              | 0.26                                                                              | 0.33                                                                              | 0.34                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 440                                                                               | 434                                                                               | 345                                                                               | 1087                                                                              | 591                                                                               | 583                                                                               |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(l)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 22.5                                                                              | 22.2                                                                              | 26.8                                                                              | 7.2                                                                               | 19.5                                                                              | 19.5                                                                              |   |      |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.2                                                                               | 0.3                                                                               | 0.1                                                                               | 1.5                                                                               | 1.6                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.4                                                                               | 0.4                                                                               | 3.1                                                                               | 3.5                                                                               | 3.6                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 22.9                                                                              | 22.4                                                                              | 27.1                                                                              | 7.3                                                                               | 21.0                                                                              | 21.1                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |      |
| Approach Vol, veh/h          | 63                                                                                |                                                                                   |                                                                                   | 308                                                                               | 389                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh        | 22.7                                                                              |                                                                                   |                                                                                   | 8.7                                                                               | 21.0                                                                              |                                                                                   |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 28.0                                                                              | 22.0                                                                              | 35.0                                                                              |                                                                                   |                                                                                   |   | 57.0 |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s  |                                                                                   | 24.0                                                                              | 18.0                                                                              | 31.0                                                                              |                                                                                   |                                                                                   |   | 53.0 |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 3.6                                                                               | 2.9                                                                               | 9.5                                                                               |                                                                                   |                                                                                   |   | 8.3  |
| Green Ext Time (p_c), s      |                                                                                   | 0.1                                                                               | 0.0                                                                               | 4.2                                                                               |                                                                                   |                                                                                   |   | 4.7  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                                                                      |  |  |  |  |  |  |   |      |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                                                             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations                                                  |  |                                                                                   |  |  |  |                                                                                   |   |      |
| Traffic Volume (veh/h)                                               | 10                                                                                | 2                                                                                 | 2                                                                                 | 259                                                                               | 255                                                                               | 35                                                                                |   |      |
| Future Volume (veh/h)                                                | 10                                                                                | 2                                                                                 | 2                                                                                 | 259                                                                               | 255                                                                               | 35                                                                                |   |      |
| Number                                                               | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln                                               | 950                                                                               | 1900                                                                              | 950                                                                               | 1810                                                                              | 1632                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h                                                 | 12                                                                                | 2                                                                                 | 2                                                                                 | 305                                                                               | 300                                                                               | 41                                                                                |   |      |
| Adj No. of Lanes                                                     | 0                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor                                                     | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |      |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 100                                                                               | 5                                                                                 | 5                                                                                 | 5                                                                                 |   |      |
| Cap, veh/h                                                           | 11                                                                                | 2                                                                                 | 563                                                                               | 1425                                                                              | 1108                                                                              | 151                                                                               |   |      |
| Arrive On Green                                                      | 0.02                                                                              | 0.02                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              |   |      |
| Sat Flow, veh/h                                                      | 715                                                                               | 119                                                                               | 528                                                                               | 1810                                                                              | 1406                                                                              | 192                                                                               |   |      |
| Grp Volume(v), veh/h                                                 | 15                                                                                | 0                                                                                 | 2                                                                                 | 305                                                                               | 0                                                                                 | 341                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln                                             | 893                                                                               | 0                                                                                 | 528                                                                               | 1810                                                                              | 0                                                                                 | 1598                                                                              |   |      |
| Q Serve(g_s), s                                                      | 0.6                                                                               | 0.0                                                                               | 0.0                                                                               | 1.7                                                                               | 0.0                                                                               | 2.3                                                                               |   |      |
| Cycle Q Clear(g_c), s                                                | 0.6                                                                               | 0.0                                                                               | 2.4                                                                               | 1.7                                                                               | 0.0                                                                               | 2.3                                                                               |   |      |
| Prop In Lane                                                         | 0.80                                                                              | 0.13                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.12                                                                              |   |      |
| Lane Grp Cap(c), veh/h                                               | 14                                                                                | 0                                                                                 | 563                                                                               | 1425                                                                              | 0                                                                                 | 1259                                                                              |   |      |
| V/C Ratio(X)                                                         | 1.10                                                                              | 0.00                                                                              | 0.00                                                                              | 0.21                                                                              | 0.00                                                                              | 0.27                                                                              |   |      |
| Avail Cap(c_a), veh/h                                                | 440                                                                               | 0                                                                                 | 563                                                                               | 1425                                                                              | 0                                                                                 | 1259                                                                              |   |      |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh                                             | 20.0                                                                              | 0.0                                                                               | 1.5                                                                               | 1.1                                                                               | 0.0                                                                               | 1.2                                                                               |   |      |
| Incr Delay (d2), s/veh                                               | 141.6                                                                             | 0.0                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.5                                                                               |   |      |
| Initial Q Delay(d3),s/veh                                            | 4.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln                                             | 0.7                                                                               | 0.0                                                                               | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 1.1                                                                               |   |      |
| LnGrp Delay(d),s/veh                                                 | 165.8                                                                             | 0.0                                                                               | 1.5                                                                               | 1.4                                                                               | 0.0                                                                               | 1.7                                                                               |   |      |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |   |      |
| Approach Vol, veh/h                                                  | 15                                                                                |                                                                                   |                                                                                   | 307                                                                               | 341                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh                                                | 165.8                                                                             |                                                                                   |                                                                                   | 1.4                                                                               | 1.7                                                                               |                                                                                   |   |      |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |      |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 4.6                                                                               |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   |   | 36.0 |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s                                          |                                                                                   | 20.0                                                                              |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                   |   | 32.0 |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 2.6                                                                               |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   |   | 4.4  |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   |   | 4.3  |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
5: Pacific Avenue & Metro Station Access

| Intersection             |                                                                                   |          |                                                                                   |      |        |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.7                                                                               |          |                                                                                   |      |        |                                                                                     |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL    | SBT                                                                                 |
| Lane Configurations      |  |          |  |      |        |  |
| Traffic Vol, veh/h       | 12                                                                                | 10       | 105                                                                               | 2    | 9      | 35                                                                                  |
| Future Vol, veh/h        | 12                                                                                | 10       | 105                                                                               | 2    | 9      | 35                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0      | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free   | Free                                                                                |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -      | None                                                                                |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -      | -                                                                                   |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Peak Hour Factor         | 81                                                                                | 81       | 81                                                                                | 81   | 81     | 81                                                                                  |
| Heavy Vehicles, %        | 12                                                                                | 10       | 13                                                                                | 100  | 100    | 8                                                                                   |
| Mvmt Flow                | 15                                                                                | 12       | 130                                                                               | 2    | 11     | 43                                                                                  |
| Major/Minor              | Minor1                                                                            |          | Major1                                                                            |      | Major2 |                                                                                     |
| Conflicting Flow All     | 196                                                                               | 131      | 0                                                                                 | 0    | 132    | 0                                                                                   |
| Stage 1                  | 131                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 65                                                                                | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy            | 6.52                                                                              | 6.3      | -                                                                                 | -    | 5.1    | -                                                                                   |
| Critical Hdwy Stg 1      | 5.52                                                                              | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy Stg 2      | 5.52                                                                              | -        | -                                                                                 | -    | -      | -                                                                                   |
| Follow-up Hdwy           | 3.608                                                                             | 3.39     | -                                                                                 | -    | 3.1    | -                                                                                   |
| Pot Cap-1 Maneuver       | 771                                                                               | 898      | -                                                                                 | -    | 1019   | -                                                                                   |
| Stage 1                  | 871                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 933                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |        | -                                                                                   |
| Mov Cap-1 Maneuver       | 763                                                                               | 898      | -                                                                                 | -    | 1019   | -                                                                                   |
| Mov Cap-2 Maneuver       | 763                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 1                  | 871                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 923                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Approach                 | WB                                                                                |          | NB                                                                                |      | SB     |                                                                                     |
| HCM Control Delay, s     | 9.5                                                                               |          | 0                                                                                 |      | 1.8    |                                                                                     |
| HCM LOS                  | A                                                                                 |          |                                                                                   |      |        |                                                                                     |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |        |                                                                                     |
| Capacity (veh/h)         | -                                                                                 | - 819    | 1019                                                                              | -    |        |                                                                                     |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.033  | 0.011                                                                             | -    |        |                                                                                     |
| HCM Control Delay (s)    | -                                                                                 | - 9.5    | 8.6                                                                               | 0    |        |                                                                                     |
| HCM Lane LOS             | -                                                                                 | - A      | A                                                                                 | A    |        |                                                                                     |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |        |                                                                                     |

Santa Cruz DRP Study  
6: Pacific Avenue & Maple Street

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.6 |
| Intersection LOS          | A   |

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 11   | 2    | 21   | 0    | 3    | 1    | 4    | 0    | 9    | 96   | 2    |
| Future Vol, veh/h   | 0    | 11   | 2    | 21   | 0    | 3    | 1    | 4    | 0    | 9    | 96   | 2    |
| Peak Hour Factor    | 0.92 | 0.80 | 0.80 | 0.80 | 0.92 | 0.80 | 0.80 | 0.80 | 0.92 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, %   | 2    | 9    | 50   | 14   | 2    | 33   | 0    | 0    | 2    | 0    | 16   | 0    |
| Mvmt Flow           | 0    | 14   | 3    | 26   | 0    | 4    | 1    | 5    | 0    | 11   | 120  | 3    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 7.4 | 7.8 | 7.8 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 8%    | 32%   | 38%   | 6%    |
| Vol Thru, %            | 90%   | 6%    | 12%   | 73%   |
| Vol Right, %           | 2%    | 62%   | 50%   | 20%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 107   | 34    | 8     | 49    |
| LT Vol                 | 9     | 11    | 3     | 3     |
| Through Vol            | 96    | 2     | 1     | 36    |
| RT Vol                 | 2     | 21    | 4     | 10    |
| Lane Flow Rate         | 134   | 42    | 10    | 61    |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.15  | 0.048 | 0.013 | 0.068 |
| Departure Headway (Hd) | 4.044 | 4.09  | 4.606 | 3.983 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 884   | 862   | 766   | 892   |
| Service Time           | 2.083 | 2.179 | 2.703 | 2.038 |
| HCM Lane V/C Ratio     | 0.152 | 0.049 | 0.013 | 0.068 |
| HCM Control Delay      | 7.8   | 7.4   | 7.8   | 7.3   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.5   | 0.2   | 0     | 0.2   |

Santa Cruz DRP Study  
6: Pacific Avenue & Maple Street

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement            | SBU  | SBL  | SBT                                                                               | SBR  |
|---------------------|------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |      |      |  |      |
| Traffic Vol, veh/h  | 0    | 3    | 36                                                                                | 10   |
| Future Vol, veh/h   | 0    | 3    | 36                                                                                | 10   |
| Peak Hour Factor    | 0.92 | 0.80 | 0.80                                                                              | 0.80 |
| Heavy Vehicles, %   | 2    | 0    | 41                                                                                | 10   |
| Mvmt Flow           | 0    | 4    | 45                                                                                | 13   |
| Number of Lanes     | 0    | 0    | 1                                                                                 | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.3 |
| HCM LOS                    | A   |

# APPENDIX F

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

Existing

AM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | SBL2                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 81                                                                                | 380                                                                               | 75                                                                                | 19                                                                                | 61                                                                                | 48                                                                                | 637                                                                                | 3                                                                                   | 5                                                                                   | 51                                                                                  | 18                                                                                  | 107                                                                                 |
| Future Volume (vph)               | 81                                                                                | 380                                                                               | 75                                                                                | 19                                                                                | 61                                                                                | 48                                                                                | 637                                                                                | 3                                                                                   | 5                                                                                   | 51                                                                                  | 18                                                                                  | 107                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1736                                                                              | 3471                                                                              | 1524                                                                              |                                                                                   | 1597                                                                              | 1770                                                                              | 3537                                                                               |                                                                                     |                                                                                     |                                                                                     | 1619                                                                                | 1599                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1736                                                                              | 3471                                                                              | 1524                                                                              |                                                                                   | 1597                                                                              | 1770                                                                              | 3537                                                                               |                                                                                     |                                                                                     |                                                                                     | 1619                                                                                | 1599                                                                                |
| Peak-hour factor, PHF             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Adj. Flow (vph)                   | 91                                                                                | 427                                                                               | 84                                                                                | 21                                                                                | 69                                                                                | 54                                                                                | 716                                                                                | 3                                                                                   | 6                                                                                   | 57                                                                                  | 20                                                                                  | 120                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 88                                                                                  |
| Lane Group Flow (vph)             | 91                                                                                | 427                                                                               | 74                                                                                | 0                                                                                 | 69                                                                                | 54                                                                                | 718                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 83                                                                                  | 32                                                                                  |
| Heavy Vehicles (%)                | 4%                                                                                | 4%                                                                                | 5%                                                                                | 10%                                                                               | 13%                                                                               | 2%                                                                                | 2%                                                                                 | 0%                                                                                  | 0%                                                                                  | 19%                                                                                 | 0%                                                                                  | 1%                                                                                  |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 |                                                                                     | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 5                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Actuated Green, G (s)             | 8.2                                                                               | 40.9                                                                              | 40.9                                                                              |                                                                                   | 7.6                                                                               | 7.6                                                                               | 40.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 22.1                                                                                | 22.1                                                                                |
| Effective Green, g (s)            | 8.2                                                                               | 40.9                                                                              | 40.9                                                                              |                                                                                   | 7.6                                                                               | 7.6                                                                               | 40.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 22.1                                                                                | 22.1                                                                                |
| Actuated g/C Ratio                | 0.10                                                                              | 0.50                                                                              | 0.50                                                                              |                                                                                   | 0.09                                                                              | 0.09                                                                              | 0.49                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.27                                                                                | 0.27                                                                                |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 172                                                                               | 1718                                                                              | 754                                                                               |                                                                                   | 146                                                                               | 162                                                                               | 1725                                                                               |                                                                                     |                                                                                     |                                                                                     | 433                                                                                 | 427                                                                                 |
| v/s Ratio Prot                    | c0.05                                                                             | 0.12                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.03                                                                              | c0.20                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.05                                                                                | 0.02                                                                                |
| v/c Ratio                         | 0.53                                                                              | 0.25                                                                              | 0.10                                                                              |                                                                                   | 0.47                                                                              | 0.33                                                                              | 0.42                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.19                                                                                | 0.08                                                                                |
| Uniform Delay, d1                 | 35.4                                                                              | 12.0                                                                              | 11.1                                                                              |                                                                                   | 35.6                                                                              | 35.1                                                                              | 13.6                                                                               |                                                                                     |                                                                                     |                                                                                     | 23.4                                                                                | 22.6                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 2.9                                                                               | 0.1                                                                               | 0.1                                                                               |                                                                                   | 2.4                                                                               | 1.2                                                                               | 0.7                                                                                |                                                                                     |                                                                                     |                                                                                     | 1.0                                                                                 | 0.3                                                                                 |
| Delay (s)                         | 38.3                                                                              | 12.1                                                                              | 11.1                                                                              |                                                                                   | 38.0                                                                              | 36.3                                                                              | 14.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 24.3                                                                                | 23.0                                                                                |
| Level of Service                  | D                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | B                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 17.7                                                                               |                                                                                     |                                                                                     |                                                                                     | 23.5                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                          |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.36                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 82.6                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 36.2%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                               |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |                                                                                   |  |                                                                                   |  |  |  |                                                                                   |  |                                                                                   |  |  |                                                                                     |
| Traffic Volume (veh/h)                                               | 28                                                                                | 47                                                                                | 8                                                                                 | 202                                                                               | 104                                                                               | 42                                                                                | 10                                                                                | 194                                                                               | 78                                                                                | 24                                                                                  | 151                                                                                 | 22                                                                                  |
| Future Volume (veh/h)                                                | 28                                                                                | 47                                                                                | 8                                                                                 | 202                                                                               | 104                                                                               | 42                                                                                | 10                                                                                | 194                                                                               | 78                                                                                | 24                                                                                  | 151                                                                                 | 22                                                                                  |
| Number                                                               | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1900                                                                              | 1837                                                                              | 1900                                                                              | 1792                                                                              | 1827                                                                              | 1827                                                                              | 1900                                                                              | 1729                                                                              | 1900                                                                              | 1638                                                                                | 1607                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                 | 33                                                                                | 55                                                                                | 9                                                                                 | 178                                                                               | 201                                                                               | 0                                                                                 | 12                                                                                | 226                                                                               | 91                                                                                | 28                                                                                  | 176                                                                                 | 26                                                                                  |
| Adj No. of Lanes                                                     | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 6                                                                                 | 3                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                 | 8                                                                                 | 16                                                                                  | 19                                                                                  | 19                                                                                  |
| Cap, veh/h                                                           | 62                                                                                | 109                                                                               | 18                                                                                | 929                                                                               | 994                                                                               | 845                                                                               | 71                                                                                | 469                                                                               | 180                                                                               | 223                                                                                 | 288                                                                                 | 43                                                                                  |
| Arrive On Green                                                      | 0.05                                                                              | 0.05                                                                              | 0.05                                                                              | 0.54                                                                              | 0.54                                                                              | 0.00                                                                              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h                                                      | 1156                                                                              | 2054                                                                              | 346                                                                               | 1707                                                                              | 1827                                                                              | 1553                                                                              | 45                                                                                | 2227                                                                              | 853                                                                               | 931                                                                                 | 1369                                                                                | 202                                                                                 |
| Grp Volume(v), veh/h                                                 | 51                                                                                | 0                                                                                 | 46                                                                                | 178                                                                               | 201                                                                               | 0                                                                                 | 177                                                                               | 0                                                                                 | 152                                                                               | 28                                                                                  | 0                                                                                   | 202                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             | 1780                                                                              | 0                                                                                 | 1776                                                                              | 1707                                                                              | 1827                                                                              | 1553                                                                              | 1702                                                                              | 0                                                                                 | 1422                                                                              | 931                                                                                 | 0                                                                                   | 1571                                                                                |
| Q Serve(g_s), s                                                      | 1.7                                                                               | 0.0                                                                               | 1.6                                                                               | 3.3                                                                               | 3.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.9                                                                               | 1.7                                                                                 | 0.0                                                                                 | 7.3                                                                                 |
| Cycle Q Clear(g_c), s                                                | 1.7                                                                               | 0.0                                                                               | 1.6                                                                               | 3.3                                                                               | 3.5                                                                               | 0.0                                                                               | 5.6                                                                               | 0.0                                                                               | 5.9                                                                               | 7.6                                                                                 | 0.0                                                                                 | 7.3                                                                                 |
| Prop In Lane                                                         | 0.65                                                                              |                                                                                   | 0.19                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.07                                                                              |                                                                                   | 0.60                                                                              | 1.00                                                                                |                                                                                     | 0.13                                                                                |
| Lane Grp Cap(c), veh/h                                               | 95                                                                                | 0                                                                                 | 95                                                                                | 929                                                                               | 994                                                                               | 845                                                                               | 420                                                                               | 0                                                                                 | 300                                                                               | 223                                                                                 | 0                                                                                   | 331                                                                                 |
| V/C Ratio(X)                                                         | 0.54                                                                              | 0.00                                                                              | 0.49                                                                              | 0.19                                                                              | 0.20                                                                              | 0.00                                                                              | 0.42                                                                              | 0.00                                                                              | 0.51                                                                              | 0.13                                                                                | 0.00                                                                                | 0.61                                                                                |
| Avail Cap(c_a), veh/h                                                | 541                                                                               | 0                                                                                 | 540                                                                               | 929                                                                               | 994                                                                               | 845                                                                               | 1001                                                                              | 0                                                                                 | 797                                                                               | 549                                                                                 | 0                                                                                   | 880                                                                                 |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 28.8                                                                              | 0.0                                                                               | 28.8                                                                              | 7.2                                                                               | 7.3                                                                               | 0.0                                                                               | 21.7                                                                              | 0.0                                                                               | 21.8                                                                              | 25.2                                                                                | 0.0                                                                                 | 22.3                                                                                |
| Incr Delay (d2), s/veh                                               | 4.6                                                                               | 0.0                                                                               | 3.9                                                                               | 0.5                                                                               | 0.5                                                                               | 0.0                                                                               | 0.7                                                                               | 0.0                                                                               | 1.3                                                                               | 0.2                                                                                 | 0.0                                                                                 | 1.8                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 1.0                                                                               | 0.0                                                                               | 0.9                                                                               | 1.7                                                                               | 1.9                                                                               | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 2.4                                                                               | 0.5                                                                                 | 0.0                                                                                 | 3.3                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 33.5                                                                              | 0.0                                                                               | 32.6                                                                              | 7.7                                                                               | 7.8                                                                               | 0.0                                                                               | 22.4                                                                              | 0.0                                                                               | 23.1                                                                              | 25.4                                                                                | 0.0                                                                                 | 24.2                                                                                |
| LnGrp LOS                                                            | C                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   |                                                                                     | C                                                                                   |
| Approach Vol, veh/h                                                  | 97                                                                                |                                                                                   |                                                                                   | 379                                                                               |                                                                                   |                                                                                   | 329                                                                               |                                                                                   |                                                                                   | 230                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 33.0                                                                              |                                                                                   |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 22.7                                                                              |                                                                                   |                                                                                   | 24.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             | 7.3                                                                               |                                                                                   |                                                                                   | 17.2                                                                              |                                                                                   |                                                                                   | 38.0                                                                              |                                                                                   |                                                                                   | 17.2                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          | 19.0                                                                              |                                                                                   |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   |                                                                                   | 35.0                                                                                |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         | 3.7                                                                               |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 7.9                                                                                 |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              | 0.4                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 1.7                                                                               |                                                                                   |                                                                                   | 3.6                                                                                 |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 18.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
9: Pacific Avenue & Cathcart Street

| Intersection               |       |      |      |       |      |      |       |      |      |      |      |      |      |      |      |      |
|----------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh  | 8     |      |      |       |      |      |       |      |      |      |      |      |      |      |      |      |
| Intersection LOS           | A     |      |      |       |      |      |       |      |      |      |      |      |      |      |      |      |
| Movement                   | EBU   | EBL  | EBT  | EBR   | WBU  | WBL  | WBT   | WBR  | NBU  | NBL  | NBT  | NBR  | SBU  | SBL  | SBT  | SBR  |
| Lane Configurations        |       |      | ↔    |       |      |      | ↔     |      |      |      | ↔    |      |      |      |      |      |
| Traffic Vol, veh/h         | 0     | 6    | 21   | 13    | 0    | 32   | 38    | 12   | 0    | 7    | 64   | 21   | 0    | 0    | 0    | 0    |
| Future Vol, veh/h          | 0     | 6    | 21   | 13    | 0    | 32   | 38    | 12   | 0    | 7    | 64   | 21   | 0    | 0    | 0    | 0    |
| Peak Hour Factor           | 0.92  | 0.81 | 0.81 | 0.81  | 0.92 | 0.81 | 0.81  | 0.81 | 0.92 | 0.81 | 0.81 | 0.81 | 0.92 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, %          | 2     | 16   | 9    | 15    | 2    | 28   | 2     | 25   | 2    | 0    | 4    | 28   | 2    | 0    | 0    | 0    |
| Mvmt Flow                  | 0     | 7    | 26   | 16    | 0    | 40   | 47    | 15   | 0    | 9    | 79   | 26   | 0    | 0    | 0    | 0    |
| Number of Lanes            | 0     | 0    | 1    | 0     | 0    | 0    | 1     | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |
| Approach                   | EB    |      |      | WB    |      |      |       | NB   |      |      |      |      |      |      |      |      |
| Opposing Approach          | WB    |      |      | EB    |      |      |       |      |      |      |      |      |      |      |      |      |
| Opposing Lanes             | 1     |      |      | 1     |      |      |       | 0    |      |      |      |      |      |      |      |      |
| Conflicting Approach Left  |       |      |      | NB    |      |      |       | EB   |      |      |      |      |      |      |      |      |
| Conflicting Lanes Left     | 0     |      |      | 1     |      |      |       | 1    |      |      |      |      |      |      |      |      |
| Conflicting Approach Right | NB    |      |      |       |      |      |       | WB   |      |      |      |      |      |      |      |      |
| Conflicting Lanes Right    | 1     |      |      | 0     |      |      |       | 1    |      |      |      |      |      |      |      |      |
| HCM Control Delay          | 7.7   |      |      | 8.4   |      |      |       | 7.8  |      |      |      |      |      |      |      |      |
| HCM LOS                    | A     |      |      | A     |      |      |       | A    |      |      |      |      |      |      |      |      |
| Lane                       | NBLn1 |      |      | EBLn1 |      |      | WBLn1 |      |      |      |      |      |      |      |      |      |
| Vol Left, %                | 8%    |      |      | 15%   |      |      | 39%   |      |      |      |      |      |      |      |      |      |
| Vol Thru, %                | 70%   |      |      | 53%   |      |      | 46%   |      |      |      |      |      |      |      |      |      |
| Vol Right, %               | 23%   |      |      | 33%   |      |      | 15%   |      |      |      |      |      |      |      |      |      |
| Sign Control               | Stop  |      |      | Stop  |      |      | Stop  |      |      |      |      |      |      |      |      |      |
| Traffic Vol by Lane        | 92    |      |      | 40    |      |      | 82    |      |      |      |      |      |      |      |      |      |
| LT Vol                     | 7     |      |      | 6     |      |      | 32    |      |      |      |      |      |      |      |      |      |
| Through Vol                | 64    |      |      | 21    |      |      | 38    |      |      |      |      |      |      |      |      |      |
| RT Vol                     | 21    |      |      | 13    |      |      | 12    |      |      |      |      |      |      |      |      |      |
| Lane Flow Rate             | 114   |      |      | 49    |      |      | 101   |      |      |      |      |      |      |      |      |      |
| Geometry Grp               | 1     |      |      | 1     |      |      | 1     |      |      |      |      |      |      |      |      |      |
| Degree of Util (X)         | 0.131 |      |      | 0.059 |      |      | 0.129 |      |      |      |      |      |      |      |      |      |
| Departure Headway (Hd)     | 4.14  |      |      | 4.285 |      |      | 4.605 |      |      |      |      |      |      |      |      |      |
| Convergence, Y/N           | Yes   |      |      | Yes   |      |      | Yes   |      |      |      |      |      |      |      |      |      |
| Cap                        | 871   |      |      | 823   |      |      | 771   |      |      |      |      |      |      |      |      |      |
| Service Time               | 2.14  |      |      | 2.38  |      |      | 2.678 |      |      |      |      |      |      |      |      |      |
| HCM Lane V/C Ratio         | 0.131 |      |      | 0.06  |      |      | 0.131 |      |      |      |      |      |      |      |      |      |
| HCM Control Delay          | 7.8   |      |      | 7.7   |      |      | 8.4   |      |      |      |      |      |      |      |      |      |
| HCM Lane LOS               | A     |      |      | A     |      |      | A     |      |      |      |      |      |      |      |      |      |
| HCM 95th-tile Q            | 0.5   |      |      | 0.2   |      |      | 0.4   |      |      |      |      |      |      |      |      |      |

Santa Cruz DRP Study  
10: Pacific Avenue & Soquel Avenue

| Intersection             |        |                                                                                   |                                                                                   |      |      |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|
| Int Delay, s/veh         | 3.7    |                                                                                   |                                                                                   |      |      |      |
| Movement                 | WBL    | WBR                                                                               | NBT                                                                               | NBR  | SBL  | SBT  |
| Lane Configurations      |        |  |  |      |      |      |
| Traffic Vol, veh/h       | 0      | 103                                                                               | 75                                                                                | 90   | 0    | 0    |
| Future Vol, veh/h        | 0      | 103                                                                               | 75                                                                                | 90   | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free | Free | Free |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -    | None |
| Storage Length           | -      | 0                                                                                 | -                                                                                 | -    | -    | -    |
| Veh in Median Storage, # | 0      | -                                                                                 | 0                                                                                 | -    | -    | -    |
| Grade, %                 | 0      | -                                                                                 | 0                                                                                 | -    | -    | 0    |
| Peak Hour Factor         | 84     | 84                                                                                | 84                                                                                | 84   | 84   | 84   |
| Heavy Vehicles, %        | 0      | 4                                                                                 | 6                                                                                 | 5    | 0    | 0    |
| Mvmt Flow                | 0      | 123                                                                               | 89                                                                                | 107  | 0    | 0    |
| Major/Minor              | Minor1 | Major1                                                                            |                                                                                   |      |      |      |
| Conflicting Flow All     | -      | 143                                                                               | 0                                                                                 | 0    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy            | -      | 6.24                                                                              | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Follow-up Hdwy           | -      | 3.336                                                                             | -                                                                                 | -    |      |      |
| Pot Cap-1 Maneuver       | 0      | 899                                                                               | -                                                                                 | -    |      |      |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Platoon blocked, %       |        |                                                                                   | -                                                                                 | -    |      |      |
| Mov Cap-1 Maneuver       | -      | 899                                                                               | -                                                                                 | -    |      |      |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Approach                 | WB     | NB                                                                                |                                                                                   |      |      |      |
| HCM Control Delay, s     | 9.6    | 0                                                                                 |                                                                                   |      |      |      |
| HCM LOS                  | A      |                                                                                   |                                                                                   |      |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBR                                                                               | WBLn1                                                                             |      |      |      |
| Capacity (veh/h)         | -      | -                                                                                 | 899                                                                               |      |      |      |
| HCM Lane V/C Ratio       | -      | -                                                                                 | 0.136                                                                             |      |      |      |
| HCM Control Delay (s)    | -      | -                                                                                 | 9.6                                                                               |      |      |      |
| HCM Lane LOS             | -      | -                                                                                 | A                                                                                 |      |      |      |
| HCM 95th %tile Q(veh)    | -      | -                                                                                 | 0.5                                                                               |      |      |      |

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Existing  
AM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 161                                                                               | 297                                                                               | 49                                                                                | 136                                                                               | 450                                                                               | 255                                                                               | 78                                                                                 | 466                                                                                 | 40                                                                                  | 175                                                                                 | 620                                                                                 | 379                                                                                 |
| Future Volume (veh/h)        | 161                                                                               | 297                                                                               | 49                                                                                | 136                                                                               | 450                                                                               | 255                                                                               | 78                                                                                 | 466                                                                                 | 40                                                                                  | 175                                                                                 | 620                                                                                 | 379                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1827                                                                              | 1822                                                                              | 1900                                                                              | 1881                                                                              | 1827                                                                              | 1863                                                                              | 1845                                                                               | 1845                                                                                | 1900                                                                                | 1863                                                                                | 1845                                                                                | 1845                                                                                |
| Adj Flow Rate, veh/h         | 173                                                                               | 319                                                                               | 53                                                                                | 146                                                                               | 484                                                                               | 0                                                                                 | 84                                                                                 | 501                                                                                 | 43                                                                                  | 188                                                                                 | 667                                                                                 | 0                                                                                   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 4                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                 | 4                                                                                 | 2                                                                                 | 3                                                                                  | 3                                                                                   | 0                                                                                   | 2                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 276                                                                               | 664                                                                               | 109                                                                               | 191                                                                               | 861                                                                               | 393                                                                               | 109                                                                                | 991                                                                                 | 457                                                                                 | 241                                                                                 | 1250                                                                                | 559                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.22                                                                              | 0.22                                                                              | 0.11                                                                              | 0.25                                                                              | 0.00                                                                              | 0.06                                                                               | 0.28                                                                                | 0.28                                                                                | 0.14                                                                                | 0.36                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3375                                                                              | 2977                                                                              | 489                                                                               | 1792                                                                              | 3471                                                                              | 1583                                                                              | 1757                                                                               | 3505                                                                                | 1615                                                                                | 1774                                                                                | 3505                                                                                | 1568                                                                                |
| Grp Volume(v), veh/h         | 173                                                                               | 184                                                                               | 188                                                                               | 146                                                                               | 484                                                                               | 0                                                                                 | 84                                                                                 | 501                                                                                 | 43                                                                                  | 188                                                                                 | 667                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1688                                                                              | 1731                                                                              | 1736                                                                              | 1792                                                                              | 1736                                                                              | 1583                                                                              | 1757                                                                               | 1752                                                                                | 1615                                                                                | 1774                                                                                | 1752                                                                                | 1568                                                                                |
| Q Serve(g_s), s              | 3.2                                                                               | 5.9                                                                               | 6.0                                                                               | 5.0                                                                               | 7.8                                                                               | 0.0                                                                               | 3.0                                                                                | 7.6                                                                                 | 1.2                                                                                 | 6.5                                                                                 | 9.6                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 3.2                                                                               | 5.9                                                                               | 6.0                                                                               | 5.0                                                                               | 7.8                                                                               | 0.0                                                                               | 3.0                                                                                | 7.6                                                                                 | 1.2                                                                                 | 6.5                                                                                 | 9.6                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.28                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 276                                                                               | 386                                                                               | 387                                                                               | 191                                                                               | 861                                                                               | 393                                                                               | 109                                                                                | 991                                                                                 | 457                                                                                 | 241                                                                                 | 1250                                                                                | 559                                                                                 |
| V/C Ratio(X)                 | 0.63                                                                              | 0.48                                                                              | 0.49                                                                              | 0.76                                                                              | 0.56                                                                              | 0.00                                                                              | 0.77                                                                               | 0.51                                                                                | 0.09                                                                                | 0.78                                                                                | 0.53                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 689                                                                               | 734                                                                               | 736                                                                               | 619                                                                               | 1963                                                                              | 895                                                                               | 386                                                                                | 1652                                                                                | 761                                                                                 | 697                                                                                 | 2257                                                                                | 1010                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.3                                                                              | 21.5                                                                              | 21.5                                                                              | 27.6                                                                              | 20.9                                                                              | 0.0                                                                               | 29.4                                                                               | 19.1                                                                                | 16.8                                                                                | 26.6                                                                                | 16.3                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.3                                                                               | 0.9                                                                               | 0.9                                                                               | 6.2                                                                               | 0.6                                                                               | 0.0                                                                               | 10.9                                                                               | 0.4                                                                                 | 0.1                                                                                 | 5.4                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 2.9                                                                               | 3.0                                                                               | 2.8                                                                               | 3.8                                                                               | 0.0                                                                               | 1.8                                                                                | 3.7                                                                                 | 0.6                                                                                 | 3.5                                                                                 | 4.7                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 30.6                                                                              | 22.4                                                                              | 22.5                                                                              | 33.8                                                                              | 21.5                                                                              | 0.0                                                                               | 40.3                                                                               | 19.5                                                                                | 16.9                                                                                | 32.0                                                                                | 16.6                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | D                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 545                                                                               |                                                                                   |                                                                                   | 630                                                                               |                                                                                   |                                                                                    | 628                                                                                 |                                                                                     |                                                                                     | 855                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 24.4                                                                              |                                                                                   |                                                                                    | 22.1                                                                                |                                                                                     |                                                                                     | 20.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.8                                                                              | 18.2                                                                              | 7.9                                                                               | 26.7                                                                              | 9.2                                                                               | 19.8                                                                              | 12.6                                                                               | 22.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 22.0                                                                              | 27.0                                                                              | 14.0                                                                              | 41.0                                                                              | 13.0                                                                              | 36.0                                                                              | 25.0                                                                               | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.0                                                                               | 8.0                                                                               | 5.0                                                                               | 11.6                                                                              | 5.2                                                                               | 9.8                                                                               | 8.5                                                                                | 9.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 5.4                                                                               | 0.1                                                                               | 9.7                                                                               | 0.3                                                                               | 6.0                                                                               | 0.5                                                                                | 8.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

|                               |  |  |  |  |  |  |  |  |   |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)        | 211                                                                               | 1518                                                                              | 49                                                                                | 266                                                                               | 1389                                                                              | 515                                                                               | 27                                                                                | 156                                                                               | 160                                                                                | 412                                                                                 | 158                                                                                 | 184                                                                                 |
| Future Volume (veh/h)         | 211                                                                               | 1518                                                                              | 49                                                                                | 266                                                                               | 1389                                                                              | 515                                                                               | 27                                                                                | 156                                                                               | 160                                                                                | 412                                                                                 | 158                                                                                 | 184                                                                                 |
| Number                        | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                 | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh           | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)           | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln        | 1845                                                                              | 1845                                                                              | 1900                                                                              | 1827                                                                              | 1827                                                                              | 1792                                                                              | 1712                                                                              | 1810                                                                              | 1810                                                                               | 1610                                                                                | 1727                                                                                | 1743                                                                                |
| Adj Flow Rate, veh/h          | 218                                                                               | 1565                                                                              | 0                                                                                 | 274                                                                               | 1432                                                                              | 0                                                                                 | 28                                                                                | 161                                                                               | 165                                                                                | 425                                                                                 | 163                                                                                 | 190                                                                                 |
| Adj No. of Lanes              | 1                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                               | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %          | 3                                                                                 | 3                                                                                 | 3                                                                                 | 4                                                                                 | 4                                                                                 | 6                                                                                 | 11                                                                                | 5                                                                                 | 5                                                                                  | 18                                                                                  | 10                                                                                  | 9                                                                                   |
| Cap, veh/h                    | 238                                                                               | 2388                                                                              | 0                                                                                 | 314                                                                               | 2154                                                                              | 658                                                                               | 235                                                                               | 261                                                                               | 391                                                                                | 613                                                                                 | 356                                                                                 | 305                                                                                 |
| Arrive On Green               | 0.14                                                                              | 0.47                                                                              | 0.00                                                                              | 0.09                                                                              | 0.43                                                                              | 0.00                                                                              | 0.14                                                                              | 0.14                                                                              | 0.14                                                                               | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h               | 1757                                                                              | 5204                                                                              | 0                                                                                 | 3375                                                                              | 4988                                                                              | 1524                                                                              | 1630                                                                              | 1810                                                                              | 2707                                                                               | 2975                                                                                | 1727                                                                                | 1482                                                                                |
| Grp Volume(v), veh/h          | 218                                                                               | 1565                                                                              | 0                                                                                 | 274                                                                               | 1432                                                                              | 0                                                                                 | 28                                                                                | 161                                                                               | 165                                                                                | 425                                                                                 | 163                                                                                 | 190                                                                                 |
| Grp Sat Flow(s),veh/h/ln      | 1757                                                                              | 1679                                                                              | 0                                                                                 | 1688                                                                              | 1663                                                                              | 1524                                                                              | 1630                                                                              | 1810                                                                              | 1354                                                                               | 1487                                                                                | 1727                                                                                | 1482                                                                                |
| Q Serve(g_s), s               | 23.8                                                                              | 46.0                                                                              | 0.0                                                                               | 15.5                                                                              | 44.4                                                                              | 0.0                                                                               | 2.9                                                                               | 16.2                                                                              | 10.8                                                                               | 25.7                                                                                | 16.1                                                                                | 22.7                                                                                |
| Cycle Q Clear(g_c), s         | 23.8                                                                              | 46.0                                                                              | 0.0                                                                               | 15.5                                                                              | 44.4                                                                              | 0.0                                                                               | 2.9                                                                               | 16.2                                                                              | 10.8                                                                               | 25.7                                                                                | 16.1                                                                                | 22.7                                                                                |
| Prop In Lane                  | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h        | 238                                                                               | 2388                                                                              | 0                                                                                 | 314                                                                               | 2154                                                                              | 658                                                                               | 235                                                                               | 261                                                                               | 391                                                                                | 613                                                                                 | 356                                                                                 | 305                                                                                 |
| V/C Ratio(X)                  | 0.92                                                                              | 0.66                                                                              | 0.00                                                                              | 0.87                                                                              | 0.66                                                                              | 0.00                                                                              | 0.12                                                                              | 0.62                                                                              | 0.42                                                                               | 0.69                                                                                | 0.46                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h         | 344                                                                               | 2388                                                                              | 0                                                                                 | 417                                                                               | 2154                                                                              | 658                                                                               | 235                                                                               | 261                                                                               | 391                                                                                | 613                                                                                 | 356                                                                                 | 305                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)            | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh      | 82.8                                                                              | 38.9                                                                              | 0.0                                                                               | 86.9                                                                              | 43.9                                                                              | 0.0                                                                               | 72.3                                                                              | 78.0                                                                              | 75.7                                                                               | 71.3                                                                                | 67.5                                                                                | 70.1                                                                                |
| Incr Delay (d2), s/veh        | 22.4                                                                              | 1.4                                                                               | 0.0                                                                               | 14.4                                                                              | 1.6                                                                               | 0.0                                                                               | 1.0                                                                               | 10.5                                                                              | 3.3                                                                                | 6.3                                                                                 | 4.2                                                                                 | 9.2                                                                                 |
| Initial Q Delay(d3),s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln      | 18.0                                                                              | 21.6                                                                              | 0.0                                                                               | 7.9                                                                               | 20.7                                                                              | 0.0                                                                               | 1.4                                                                               | 8.9                                                                               | 4.2                                                                                | 11.1                                                                                | 8.1                                                                                 | 10.1                                                                                |
| LnGrp Delay(d),s/veh          | 105.2                                                                             | 40.4                                                                              | 0.0                                                                               | 101.3                                                                             | 45.6                                                                              | 0.0                                                                               | 73.3                                                                              | 88.4                                                                              | 79.0                                                                               | 77.7                                                                                | 71.7                                                                                | 79.4                                                                                |
| LnGrp LOS                     | F                                                                                 | D                                                                                 |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                  | E                                                                                   | E                                                                                   | E                                                                                   |
| Approach Vol, veh/h           | 1783                                                                              |                                                                                   |                                                                                   | 1706                                                                              |                                                                                   |                                                                                   | 354                                                                               |                                                                                   |                                                                                    | 778                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 48.3                                                                              |                                                                                   |                                                                                   | 54.5                                                                              |                                                                                   |                                                                                   | 82.8                                                                              |                                                                                   |                                                                                    | 76.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |
| Timer                         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 32.1                                                                              | 96.0                                                                              |                                                                                   | 32.0                                                                              | 30.2                                                                              | 87.8                                                                              |                                                                                   | 44.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s   | 24.0                                                                              | 92.0                                                                              |                                                                                   | 28.0                                                                              | 38.0                                                                              | 78.0                                                                              |                                                                                   | 40.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+1.5), s | 17.5                                                                              | 48.0                                                                              |                                                                                   | 18.2                                                                              | 25.8                                                                              | 46.4                                                                              |                                                                                   | 27.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s       | 0.5                                                                               | 35.9                                                                              |                                                                                   | 1.1                                                                               | 0.5                                                                               | 27.2                                                                              |                                                                                   | 2.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay           | 58.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)                                               | 1428                                                                              | 392                                                                               | 51                                                                                | 7                                                                                 | 367                                                                               | 27                                                                                | 95                                                                                | 280                                                                               | 24                                                                                | 58                                                                                  | 204                                                                                 | 1471                                                                                |
| Future Volume (veh/h)                                                | 1428                                                                              | 392                                                                               | 51                                                                                | 7                                                                                 | 367                                                                               | 27                                                                                | 95                                                                                | 280                                                                               | 24                                                                                | 58                                                                                  | 204                                                                                 | 1471                                                                                |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1845                                                                              | 1839                                                                              | 1900                                                                              | 1900                                                                              | 1849                                                                              | 1900                                                                              | 1881                                                                              | 1883                                                                              | 1900                                                                              | 1881                                                                                | 1845                                                                                | 1827                                                                                |
| Adj Flow Rate, veh/h                                                 | 1587                                                                              | 436                                                                               | 57                                                                                | 8                                                                                 | 408                                                                               | 0                                                                                 | 106                                                                               | 311                                                                               | 27                                                                                | 64                                                                                  | 227                                                                                 | 1634                                                                                |
| Adj No. of Lanes                                                     | 2                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 2                                                                                   |
| Peak Hour Factor                                                     | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %                                                 | 3                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 3                                                                                   | 4                                                                                   |
| Cap, veh/h                                                           | 1222                                                                              | 554                                                                               | 72                                                                                | 10                                                                                | 520                                                                               | 0                                                                                 | 139                                                                               | 1052                                                                              | 91                                                                                | 84                                                                                  | 1000                                                                                | 1182                                                                                |
| Arrive On Green                                                      | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.15                                                                              | 0.15                                                                              | 0.00                                                                              | 0.08                                                                              | 0.32                                                                              | 0.32                                                                              | 0.05                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h                                                      | 3514                                                                              | 1594                                                                              | 208                                                                               | 66                                                                                | 3629                                                                              | 0                                                                                 | 1792                                                                              | 3333                                                                              | 288                                                                               | 1792                                                                                | 3505                                                                                | 2733                                                                                |
| Grp Volume(v), veh/h                                                 | 1587                                                                              | 0                                                                                 | 493                                                                               | 223                                                                               | 193                                                                               | 0                                                                                 | 106                                                                               | 166                                                                               | 172                                                                               | 64                                                                                  | 227                                                                                 | 1634                                                                                |
| Grp Sat Flow(s),veh/h/ln                                             | 1757                                                                              | 0                                                                                 | 1803                                                                              | 1846                                                                              | 1757                                                                              | 0                                                                                 | 1792                                                                              | 1789                                                                              | 1832                                                                              | 1792                                                                                | 1752                                                                                | 1367                                                                                |
| Q Serve(g_s), s                                                      | 39.0                                                                              | 0.0                                                                               | 27.5                                                                              | 13.1                                                                              | 11.8                                                                              | 0.0                                                                               | 6.5                                                                               | 7.9                                                                               | 8.0                                                                               | 4.0                                                                                 | 5.6                                                                                 | 32.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 39.0                                                                              | 0.0                                                                               | 27.5                                                                              | 13.1                                                                              | 11.8                                                                              | 0.0                                                                               | 6.5                                                                               | 7.9                                                                               | 8.0                                                                               | 4.0                                                                                 | 5.6                                                                                 | 32.0                                                                                |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 0.12                                                                              | 0.04                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.16                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 1222                                                                              | 0                                                                                 | 627                                                                               | 271                                                                               | 258                                                                               | 0                                                                                 | 139                                                                               | 564                                                                               | 578                                                                               | 84                                                                                  | 1000                                                                                | 1182                                                                                |
| V/C Ratio(X)                                                         | 1.30                                                                              | 0.00                                                                              | 0.79                                                                              | 0.82                                                                              | 0.75                                                                              | 0.00                                                                              | 0.77                                                                              | 0.29                                                                              | 0.30                                                                              | 0.76                                                                                | 0.23                                                                                | 1.38                                                                                |
| Avail Cap(c_a), veh/h                                                | 1222                                                                              | 0                                                                                 | 627                                                                               | 362                                                                               | 345                                                                               | 0                                                                                 | 655                                                                               | 564                                                                               | 578                                                                               | 639                                                                                 | 1000                                                                                | 1182                                                                                |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 36.6                                                                              | 0.0                                                                               | 32.8                                                                              | 46.4                                                                              | 45.8                                                                              | 0.0                                                                               | 50.7                                                                              | 29.0                                                                              | 29.0                                                                              | 52.8                                                                                | 30.6                                                                                | 27.2                                                                                |
| Incr Delay (d2), s/veh                                               | 140.6                                                                             | 0.0                                                                               | 6.6                                                                               | 10.7                                                                              | 6.1                                                                               | 0.0                                                                               | 8.5                                                                               | 0.3                                                                               | 0.3                                                                               | 13.0                                                                                | 0.1                                                                                 | 177.7                                                                               |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 42.7                                                                              | 0.0                                                                               | 14.8                                                                              | 7.5                                                                               | 6.2                                                                               | 0.0                                                                               | 3.5                                                                               | 3.9                                                                               | 4.1                                                                               | 2.3                                                                                 | 2.7                                                                                 | 47.4                                                                                |
| LnGrp Delay(d),s/veh                                                 | 177.2                                                                             | 0.0                                                                               | 39.4                                                                              | 57.1                                                                              | 51.9                                                                              | 0.0                                                                               | 59.2                                                                              | 29.2                                                                              | 29.3                                                                              | 65.8                                                                                | 30.7                                                                                | 204.8                                                                               |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                  | 2080                                                                              |                                                                                   |                                                                                   | 416                                                                               |                                                                                   |                                                                                   | 444                                                                               |                                                                                   |                                                                                   | 1925                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 144.6                                                                             |                                                                                   |                                                                                   | 54.7                                                                              |                                                                                   |                                                                                   | 36.4                                                                              |                                                                                   |                                                                                   | 179.7                                                                               |                                                                                     |                                                                                     |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 20.5                                                                              | 12.7                                                                              | 36.0                                                                              |                                                                                   | 43.0                                                                              | 9.3                                                                               | 39.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   | 22.0                                                                              | 41.0                                                                              | 32.0                                                                              |                                                                                   | 39.0                                                                              | 40.0                                                                              | 33.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 15.1                                                                              | 8.5                                                                               | 34.0                                                                              |                                                                                   | 41.0                                                                              | 6.0                                                                               | 10.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   | 1.3                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.2                                                                               | 2.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 140.9                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing  
PM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 84                                                                                | 638                                                                               | 30                                                                                | 228                                                                               | 378                                                                               | 110                                                                               | 8                                                                                  | 165                                                                                 | 229                                                                                 | 118                                                                                 | 322                                                                                 | 156                                                                                 |
| Future Volume (veh/h)        | 84                                                                                | 638                                                                               | 30                                                                                | 228                                                                               | 378                                                                               | 110                                                                               | 8                                                                                  | 165                                                                                 | 229                                                                                 | 118                                                                                 | 322                                                                                 | 156                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1897                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1881                                                                                | 1900                                                                                | 1827                                                                                | 1900                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 89                                                                                | 679                                                                               | 32                                                                                | 243                                                                               | 402                                                                               | 117                                                                               | 9                                                                                  | 176                                                                                 | 244                                                                                 | 126                                                                                 | 343                                                                                 | 166                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 372                                                                               | 1237                                                                              | 58                                                                                | 286                                                                               | 567                                                                               | 486                                                                               | 16                                                                                 | 355                                                                                 | 305                                                                                 | 158                                                                                 | 514                                                                                 | 437                                                                                 |
| Arrive On Green              | 0.21                                                                              | 0.35                                                                              | 0.35                                                                              | 0.16                                                                              | 0.30                                                                              | 0.30                                                                              | 0.01                                                                               | 0.19                                                                                | 0.19                                                                                | 0.09                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3506                                                                              | 165                                                                               | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                               | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Grp Volume(v), veh/h         | 89                                                                                | 349                                                                               | 362                                                                               | 243                                                                               | 402                                                                               | 117                                                                               | 9                                                                                  | 176                                                                                 | 244                                                                                 | 126                                                                                 | 343                                                                                 | 166                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1803                                                                              | 1868                                                                              | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                               | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Q Serve(g_s), s              | 3.2                                                                               | 11.9                                                                              | 11.9                                                                              | 10.0                                                                              | 14.5                                                                              | 4.2                                                                               | 0.4                                                                                | 6.4                                                                                 | 11.0                                                                                | 5.4                                                                                 | 12.3                                                                                | 6.4                                                                                 |
| Cycle Q Clear(g_c), s        | 3.2                                                                               | 11.9                                                                              | 11.9                                                                              | 10.0                                                                              | 14.5                                                                              | 4.2                                                                               | 0.4                                                                                | 6.4                                                                                 | 11.0                                                                                | 5.4                                                                                 | 12.3                                                                                | 6.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.09                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 372                                                                               | 636                                                                               | 659                                                                               | 286                                                                               | 567                                                                               | 486                                                                               | 16                                                                                 | 355                                                                                 | 305                                                                                 | 158                                                                                 | 514                                                                                 | 437                                                                                 |
| V/C Ratio(X)                 | 0.24                                                                              | 0.55                                                                              | 0.55                                                                              | 0.85                                                                              | 0.71                                                                              | 0.24                                                                              | 0.55                                                                               | 0.50                                                                                | 0.80                                                                                | 0.80                                                                                | 0.67                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 372                                                                               | 636                                                                               | 659                                                                               | 332                                                                               | 567                                                                               | 486                                                                               | 95                                                                                 | 394                                                                                 | 338                                                                                 | 205                                                                                 | 523                                                                                 | 444                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 25.1                                                                              | 19.8                                                                              | 19.8                                                                              | 31.3                                                                              | 23.7                                                                              | 20.1                                                                              | 37.7                                                                               | 27.7                                                                                | 29.6                                                                                | 34.0                                                                                | 24.8                                                                                | 22.6                                                                                |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 3.4                                                                               | 3.3                                                                               | 16.7                                                                              | 7.3                                                                               | 1.2                                                                               | 25.3                                                                               | 1.1                                                                                 | 11.8                                                                                | 15.1                                                                                | 3.2                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.7                                                                               | 6.5                                                                               | 6.7                                                                               | 6.3                                                                               | 8.6                                                                               | 2.0                                                                               | 0.3                                                                                | 3.4                                                                                 | 5.9                                                                                 | 3.3                                                                                 | 6.8                                                                                 | 2.9                                                                                 |
| LnGrp Delay(d),s/veh         | 26.6                                                                              | 23.2                                                                              | 23.1                                                                              | 48.0                                                                              | 31.1                                                                              | 21.3                                                                              | 63.0                                                                               | 28.8                                                                                | 41.4                                                                                | 49.1                                                                                | 28.0                                                                                | 23.2                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                  | C                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 800                                                                               |                                                                                   | 762                                                                               |                                                                                   |                                                                                   |                                                                                   | 429                                                                                |                                                                                     | 635                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 23.5                                                                              |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 36.7                                                                               |                                                                                     | 30.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.1                                                                              | 30.9                                                                              | 4.7                                                                               | 24.7                                                                              | 20.0                                                                              | 27.0                                                                              | 10.9                                                                               | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 14.0                                                                              | 25.0                                                                              | 4.0                                                                               | 21.0                                                                              | 16.0                                                                              | 23.0                                                                              | 9.0                                                                                | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.0                                                                              | 13.9                                                                              | 2.4                                                                               | 14.3                                                                              | 5.2                                                                               | 16.5                                                                              | 7.4                                                                                | 13.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 5.5                                                                               | 0.0                                                                               | 2.6                                                                               | 0.1                                                                               | 3.7                                                                               | 0.0                                                                                | 1.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 30.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

|                             |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                    | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations         |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                   |                                                                                     |  |  |
| Traffic Volume (veh/h)      | 48                                                                                | 640                                                                               | 25                                                                                | 37                                                                                | 456                                                                               | 89                                                                                | 41                                                                                | 77                                                                                | 48                                                                                | 56                                                                                  | 58                                                                                  | 37                                                                                  |
| Future Volume (veh/h)       | 48                                                                                | 640                                                                               | 25                                                                                | 37                                                                                | 456                                                                               | 89                                                                                | 41                                                                                | 77                                                                                | 48                                                                                | 56                                                                                  | 58                                                                                  | 37                                                                                  |
| Number                      | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)         | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln      | 1727                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1894                                                                              | 1900                                                                              | 1900                                                                              | 1843                                                                              | 1900                                                                              | 1900                                                                                | 1808                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h        | 51                                                                                | 681                                                                               | 27                                                                                | 39                                                                                | 485                                                                               | 95                                                                                | 44                                                                                | 82                                                                                | 51                                                                                | 60                                                                                  | 62                                                                                  | 39                                                                                  |
| Adj No. of Lanes            | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor            | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %        | 10                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                  | 99                                                                                | 962                                                                               | 38                                                                                | 106                                                                               | 814                                                                               | 159                                                                               | 402                                                                               | 250                                                                               | 156                                                                               | 167                                                                                 | 161                                                                                 | 81                                                                                  |
| Arrive On Green             | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h             | 1645                                                                              | 1815                                                                              | 72                                                                                | 1810                                                                              | 1539                                                                              | 301                                                                               | 1314                                                                              | 1064                                                                              | 662                                                                               | 401                                                                                 | 684                                                                                 | 347                                                                                 |
| Grp Volume(v), veh/h        | 51                                                                                | 0                                                                                 | 708                                                                               | 39                                                                                | 0                                                                                 | 580                                                                               | 44                                                                                | 0                                                                                 | 133                                                                               | 161                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln    | 1645                                                                              | 0                                                                                 | 1887                                                                              | 1810                                                                              | 0                                                                                 | 1841                                                                              | 1314                                                                              | 0                                                                                 | 1726                                                                              | 1431                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s             | 2.0                                                                               | 0.0                                                                               | 19.2                                                                              | 1.4                                                                               | 0.0                                                                               | 14.8                                                                              | 0.0                                                                               | 0.0                                                                               | 4.3                                                                               | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s       | 2.0                                                                               | 0.0                                                                               | 19.2                                                                              | 1.4                                                                               | 0.0                                                                               | 14.8                                                                              | 2.0                                                                               | 0.0                                                                               | 4.3                                                                               | 6.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 0.16                                                                              | 1.00                                                                              |                                                                                   | 0.38                                                                              | 0.37                                                                                |                                                                                     | 0.24                                                                                |
| Lane Grp Cap(c), veh/h      | 99                                                                                | 0                                                                                 | 1001                                                                              | 106                                                                               | 0                                                                                 | 973                                                                               | 402                                                                               | 0                                                                                 | 406                                                                               | 409                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                | 0.51                                                                              | 0.00                                                                              | 0.71                                                                              | 0.37                                                                              | 0.00                                                                              | 0.60                                                                              | 0.11                                                                              | 0.00                                                                              | 0.33                                                                              | 0.39                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h       | 386                                                                               | 0                                                                                 | 1001                                                                              | 425                                                                               | 0                                                                                 | 973                                                                               | 402                                                                               | 0                                                                                 | 406                                                                               | 409                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)          | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh    | 31.0                                                                              | 0.0                                                                               | 12.0                                                                              | 30.8                                                                              | 0.0                                                                               | 11.1                                                                              | 20.7                                                                              | 0.0                                                                               | 21.6                                                                              | 22.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh      | 4.1                                                                               | 0.0                                                                               | 4.2                                                                               | 2.1                                                                               | 0.0                                                                               | 2.7                                                                               | 0.5                                                                               | 0.0                                                                               | 2.2                                                                               | 2.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln    | 1.0                                                                               | 0.0                                                                               | 11.0                                                                              | 0.8                                                                               | 0.0                                                                               | 8.1                                                                               | 0.7                                                                               | 0.0                                                                               | 2.3                                                                               | 3.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh        | 35.1                                                                              | 0.0                                                                               | 16.2                                                                              | 32.9                                                                              | 0.0                                                                               | 13.7                                                                              | 21.2                                                                              | 0.0                                                                               | 23.7                                                                              | 25.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                   | D                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h         | 759                                                                               |                                                                                   |                                                                                   | 619                                                                               |                                                                                   |                                                                                   | 177                                                                               |                                                                                   |                                                                                   | 161                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh       | 17.5                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 23.1                                                                              |                                                                                   |                                                                                   | 25.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Timer                       | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s    | 40.1                                                                              |                                                                                   |                                                                                   | 20.0                                                                              | 8.1                                                                               | 40.0                                                                              |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s     | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s | 10.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              | 16.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I), s | 13.4                                                                              | 21.2                                                                              |                                                                                   | 8.9                                                                               | 4.0                                                                               | 16.8                                                                              |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s     | 0.0                                                                               | 7.7                                                                               |                                                                                   | 1.1                                                                               | 0.1                                                                               | 9.0                                                                               |                                                                                   | 1.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay         |                                                                                   |                                                                                   |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Traffic Volume (veh/h)       | 109                                                                               | 60                                                                                | 52                                                                                | 380                                                                               | 570                                                                               | 134                                                                               |   |      |
| Future Volume (veh/h)        | 109                                                                               | 60                                                                                | 52                                                                                | 380                                                                               | 570                                                                               | 134                                                                               |   |      |
| Number                       | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1881                                                                              | 1845                                                                              | 1810                                                                              | 1827                                                                              | 1860                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h         | 114                                                                               | 62                                                                                | 54                                                                                | 396                                                                               | 594                                                                               | 140                                                                               |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |   |      |
| Percent Heavy Veh, %         | 1                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 | 1                                                                                 | 1                                                                                 |   |      |
| Cap, veh/h                   | 464                                                                               | 406                                                                               | 365                                                                               | 1182                                                                              | 1103                                                                              | 259                                                                               |   |      |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.21                                                                              | 0.65                                                                              | 0.39                                                                              | 0.39                                                                              |   |      |
| Sat Flow, veh/h              | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 2934                                                                              | 668                                                                               |   |      |
| Grp Volume(v), veh/h         | 114                                                                               | 62                                                                                | 54                                                                                | 396                                                                               | 369                                                                               | 365                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 1767                                                                              | 1742                                                                              |   |      |
| Q Serve(g_s), s              | 4.3                                                                               | 2.6                                                                               | 2.2                                                                               | 8.3                                                                               | 13.7                                                                              | 13.8                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 4.3                                                                               | 2.6                                                                               | 2.2                                                                               | 8.3                                                                               | 13.7                                                                              | 13.8                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.38                                                                              |   |      |
| Lane Grp Cap(c), veh/h       | 464                                                                               | 406                                                                               | 365                                                                               | 1182                                                                              | 686                                                                               | 676                                                                               |   |      |
| V/C Ratio(X)                 | 0.25                                                                              | 0.15                                                                              | 0.15                                                                              | 0.33                                                                              | 0.54                                                                              | 0.54                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 464                                                                               | 406                                                                               | 365                                                                               | 1182                                                                              | 686                                                                               | 676                                                                               |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 24.9                                                                              | 24.3                                                                              | 27.3                                                                              | 6.8                                                                               | 20.1                                                                              | 20.1                                                                              |   |      |
| Incr Delay (d2), s/veh       | 1.3                                                                               | 0.8                                                                               | 0.9                                                                               | 0.2                                                                               | 3.0                                                                               | 3.1                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 2.3                                                                               | 1.2                                                                               | 1.1                                                                               | 4.2                                                                               | 7.2                                                                               | 7.2                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 26.2                                                                              | 25.1                                                                              | 28.1                                                                              | 6.9                                                                               | 23.1                                                                              | 23.2                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |      |
| Approach Vol, veh/h          | 176                                                                               |                                                                                   |                                                                                   | 450                                                                               | 734                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh        | 25.8                                                                              |                                                                                   |                                                                                   | 9.5                                                                               | 23.2                                                                              |                                                                                   |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 26.0                                                                              | 22.0                                                                              | 37.0                                                                              |                                                                                   |                                                                                   |   | 59.0 |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s  |                                                                                   | 22.0                                                                              | 18.0                                                                              | 33.0                                                                              |                                                                                   |                                                                                   |   | 55.0 |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.3                                                                               | 4.2                                                                               | 15.8                                                                              |                                                                                   |                                                                                   |   | 10.3 |
| Green Ext Time (p_c), s      |                                                                                   | 0.4                                                                               | 0.1                                                                               | 6.8                                                                               |                                                                                   |                                                                                   |   | 9.2  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                                                                      |  |  |  |  |  |  |   |      |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                                                             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations                                                  |  |                                                                                   |  |  |  |                                                                                   |   |      |
| Traffic Volume (veh/h)                                               | 16                                                                                | 2                                                                                 | 5                                                                                 | 403                                                                               | 605                                                                               | 17                                                                                |   |      |
| Future Volume (veh/h)                                                | 16                                                                                | 2                                                                                 | 5                                                                                 | 403                                                                               | 605                                                                               | 17                                                                                |   |      |
| Number                                                               | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln                                               | 976                                                                               | 1900                                                                              | 1056                                                                              | 1900                                                                              | 1839                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h                                                 | 17                                                                                | 2                                                                                 | 5                                                                                 | 420                                                                               | 630                                                                               | 18                                                                                |   |      |
| Adj No. of Lanes                                                     | 0                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor                                                     | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |   |      |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 80                                                                                | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |      |
| Cap, veh/h                                                           | 15                                                                                | 2                                                                                 | 469                                                                               | 1508                                                                              | 1412                                                                              | 40                                                                                |   |      |
| Arrive On Green                                                      | 0.02                                                                              | 0.02                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              |   |      |
| Sat Flow, veh/h                                                      | 782                                                                               | 92                                                                                | 442                                                                               | 1900                                                                              | 1779                                                                              | 51                                                                                |   |      |
| Grp Volume(v), veh/h                                                 | 20                                                                                | 0                                                                                 | 5                                                                                 | 420                                                                               | 0                                                                                 | 648                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln                                             | 920                                                                               | 0                                                                                 | 442                                                                               | 1900                                                                              | 0                                                                                 | 1830                                                                              |   |      |
| Q Serve(g_s), s                                                      | 0.8                                                                               | 0.0                                                                               | 0.2                                                                               | 2.5                                                                               | 0.0                                                                               | 4.8                                                                               |   |      |
| Cycle Q Clear(g_c), s                                                | 0.8                                                                               | 0.0                                                                               | 5.0                                                                               | 2.5                                                                               | 0.0                                                                               | 4.8                                                                               |   |      |
| Prop In Lane                                                         | 0.85                                                                              | 0.10                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |   |      |
| Lane Grp Cap(c), veh/h                                               | 18                                                                                | 0                                                                                 | 469                                                                               | 1508                                                                              | 0                                                                                 | 1452                                                                              |   |      |
| V/C Ratio(X)                                                         | 1.10                                                                              | 0.00                                                                              | 0.01                                                                              | 0.28                                                                              | 0.00                                                                              | 0.45                                                                              |   |      |
| Avail Cap(c_a), veh/h                                                | 387                                                                               | 0                                                                                 | 469                                                                               | 1508                                                                              | 0                                                                                 | 1452                                                                              |   |      |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh                                             | 21.0                                                                              | 0.0                                                                               | 2.2                                                                               | 1.2                                                                               | 0.0                                                                               | 1.4                                                                               |   |      |
| Incr Delay (d2), s/veh                                               | 127.4                                                                             | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 1.0                                                                               |   |      |
| Initial Q Delay(d3),s/veh                                            | 4.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln                                             | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 2.7                                                                               |   |      |
| LnGrp Delay(d),s/veh                                                 | 153.1                                                                             | 0.0                                                                               | 2.3                                                                               | 1.6                                                                               | 0.0                                                                               | 2.4                                                                               |   |      |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |   |      |
| Approach Vol, veh/h                                                  | 20                                                                                |                                                                                   |                                                                                   | 425                                                                               | 648                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh                                                | 153.1                                                                             |                                                                                   |                                                                                   | 1.6                                                                               | 2.4                                                                               |                                                                                   |   |      |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |      |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 4.8                                                                               |                                                                                   | 38.0                                                                              |                                                                                   |                                                                                   |   | 38.0 |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s                                          |                                                                                   | 18.0                                                                              |                                                                                   | 34.0                                                                              |                                                                                   |                                                                                   |   | 34.0 |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 2.8                                                                               |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                   |   | 7.0  |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   |   | 8.3  |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
5: Pacific Avenue & Metro Station Access

| Intersection             |                                                                                   |          |                                                                                   |      |        |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |          |                                                                                   |      |        |                                                                                     |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL    | SBT                                                                                 |
| Lane Configurations      |  |          |  |      |        |  |
| Traffic Vol, veh/h       | 8                                                                                 | 11       | 186                                                                               | 2    | 11     | 70                                                                                  |
| Future Vol, veh/h        | 8                                                                                 | 11       | 186                                                                               | 2    | 11     | 70                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0      | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free   | Free                                                                                |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -      | None                                                                                |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -      | -                                                                                   |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Peak Hour Factor         | 90                                                                                | 90       | 90                                                                                | 90   | 90     | 90                                                                                  |
| Heavy Vehicles, %        | 100                                                                               | 90       | 4                                                                                 | 100  | 90     | 1                                                                                   |
| Mvmt Flow                | 9                                                                                 | 12       | 207                                                                               | 2    | 12     | 78                                                                                  |
| Major/Minor              | Minor1                                                                            |          | Major1                                                                            |      | Major2 |                                                                                     |
| Conflicting Flow All     | 310                                                                               | 208      | 0                                                                                 | 0    | 209    | 0                                                                                   |
| Stage 1                  | 208                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 102                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy            | 7.4                                                                               | 7.1      | -                                                                                 | -    | 5      | -                                                                                   |
| Critical Hdwy Stg 1      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy Stg 2      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Follow-up Hdwy           | 4.4                                                                               | 4.11     | -                                                                                 | -    | 3.01   | -                                                                                   |
| Pot Cap-1 Maneuver       | 520                                                                               | 653      | -                                                                                 | -    | 975    | -                                                                                   |
| Stage 1                  | 640                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 726                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |        | -                                                                                   |
| Mov Cap-1 Maneuver       | 513                                                                               | 653      | -                                                                                 | -    | 975    | -                                                                                   |
| Mov Cap-2 Maneuver       | 513                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 1                  | 640                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 717                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Approach                 | WB                                                                                |          | NB                                                                                |      | SB     |                                                                                     |
| HCM Control Delay, s     | 11.4                                                                              |          | 0                                                                                 |      | 1.2    |                                                                                     |
| HCM LOS                  | B                                                                                 |          |                                                                                   |      |        |                                                                                     |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |        |                                                                                     |
| Capacity (veh/h)         | -                                                                                 | - 586    | 975                                                                               | -    |        |                                                                                     |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.036  | 0.013                                                                             | -    |        |                                                                                     |
| HCM Control Delay (s)    | -                                                                                 | - 11.4   | 8.7                                                                               | 0    |        |                                                                                     |
| HCM Lane LOS             | -                                                                                 | - B      | A                                                                                 | A    |        |                                                                                     |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |        |                                                                                     |

Santa Cruz DRP Study  
6: Pacific Avenue & Maple Street

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.1 |
| Intersection LOS          | A   |

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 18   | 4    | 35   | 0    | 4    | 2    | 4    | 0    | 23   | 171  | 6    |
| Future Vol, veh/h   | 0    | 18   | 4    | 35   | 0    | 4    | 2    | 4    | 0    | 23   | 171  | 6    |
| Peak Hour Factor    | 0.92 | 0.93 | 0.93 | 0.93 | 0.92 | 0.93 | 0.93 | 0.93 | 0.92 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, %   | 2    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 2    | 0    | 7    | 0    |
| Mvmt Flow           | 0    | 19   | 4    | 38   | 0    | 4    | 2    | 4    | 0    | 25   | 184  | 6    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 7.6 | 7.5 | 8.5 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 12%   | 32%   | 40%   | 5%    |
| Vol Thru, %            | 85%   | 7%    | 20%   | 85%   |
| Vol Right, %           | 3%    | 61%   | 40%   | 10%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 200   | 57    | 10    | 82    |
| LT Vol                 | 23    | 18    | 4     | 4     |
| Through Vol            | 171   | 4     | 2     | 70    |
| RT Vol                 | 6     | 35    | 4     | 8     |
| Lane Flow Rate         | 215   | 61    | 11    | 88    |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.245 | 0.073 | 0.013 | 0.101 |
| Departure Headway (Hd) | 4.097 | 4.267 | 4.47  | 4.141 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 869   | 845   | 805   | 852   |
| Service Time           | 2.161 | 2.267 | 2.474 | 2.232 |
| HCM Lane V/C Ratio     | 0.247 | 0.072 | 0.014 | 0.103 |
| HCM Control Delay      | 8.5   | 7.6   | 7.5   | 7.7   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 1     | 0.2   | 0     | 0.3   |

Santa Cruz DRP Study  
6: Pacific Avenue & Maple Street

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement            | SBU  | SBL  | SBT                                                                               | SBR  |
|---------------------|------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |      |      |  |      |
| Traffic Vol, veh/h  | 0    | 4    | 70                                                                                | 8    |
| Future Vol, veh/h   | 0    | 4    | 70                                                                                | 8    |
| Peak Hour Factor    | 0.92 | 0.93 | 0.93                                                                              | 0.93 |
| Heavy Vehicles, %   | 2    | 0    | 17                                                                                | 0    |
| Mvmt Flow           | 0    | 4    | 75                                                                                | 9    |
| Number of Lanes     | 0    | 0    | 1                                                                                 | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.7 |
| HCM LOS                    | A   |

# APPENDIX F

Santa Cruz DRP Study

Existing

7: Pacific Street & Front Street & Mission Street/Water Street

PM Peak

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | WBR                                                                                 | SBL2                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 152                                                                               | 629                                                                               | 110                                                                               | 19                                                                                | 108                                                                               | 49                                                                                | 630                                                                               | 3                                                                                   | 19                                                                                  | 106                                                                                 | 33                                                                                  | 174                                                                                 |
| Future Volume (vph)               | 152                                                                               | 629                                                                               | 110                                                                               | 19                                                                                | 108                                                                               | 49                                                                                | 630                                                                               | 3                                                                                   | 19                                                                                  | 106                                                                                 | 33                                                                                  | 174                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1787                                                                              | 3574                                                                              | 1590                                                                              |                                                                                   | 1787                                                                              | 1770                                                                              | 3572                                                                              |                                                                                     |                                                                                     |                                                                                     | 1747                                                                                | 1599                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1787                                                                              | 3574                                                                              | 1590                                                                              |                                                                                   | 1787                                                                              | 1770                                                                              | 3572                                                                              |                                                                                     |                                                                                     |                                                                                     | 1747                                                                                | 1599                                                                                |
| Peak-hour factor, PHF             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 163                                                                               | 676                                                                               | 118                                                                               | 20                                                                                | 116                                                                               | 53                                                                                | 677                                                                               | 3                                                                                   | 20                                                                                  | 114                                                                                 | 35                                                                                  | 187                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 129                                                                                 |
| Lane Group Flow (vph)             | 163                                                                               | 676                                                                               | 106                                                                               | 0                                                                                 | 116                                                                               | 53                                                                                | 679                                                                               | 0                                                                                   | 0                                                                                   | 0                                                                                   | 169                                                                                 | 58                                                                                  |
| Heavy Vehicles (%)                | 1%                                                                                | 1%                                                                                | 1%                                                                                | 5%                                                                                | 1%                                                                                | 2%                                                                                | 1%                                                                                | 0%                                                                                  | 5%                                                                                  | 5%                                                                                  | 3%                                                                                  | 1%                                                                                  |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                     | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 5                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Actuated Green, G (s)             | 12.6                                                                              | 39.4                                                                              | 39.4                                                                              |                                                                                   | 9.2                                                                               | 9.2                                                                               | 36.0                                                                              |                                                                                     |                                                                                     |                                                                                     | 22.0                                                                                | 22.0                                                                                |
| Effective Green, g (s)            | 12.6                                                                              | 39.4                                                                              | 39.4                                                                              |                                                                                   | 9.2                                                                               | 9.2                                                                               | 36.0                                                                              |                                                                                     |                                                                                     |                                                                                     | 22.0                                                                                | 22.0                                                                                |
| Actuated g/C Ratio                | 0.15                                                                              | 0.48                                                                              | 0.48                                                                              |                                                                                   | 0.11                                                                              | 0.11                                                                              | 0.44                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.27                                                                                | 0.27                                                                                |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 272                                                                               | 1704                                                                              | 758                                                                               |                                                                                   | 199                                                                               | 197                                                                               | 1556                                                                              |                                                                                     |                                                                                     |                                                                                     | 465                                                                                 | 425                                                                                 |
| v/s Ratio Prot                    | c0.09                                                                             | c0.19                                                                             |                                                                                   |                                                                                   | 0.06                                                                              | 0.03                                                                              | c0.19                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.10                                                                                | 0.04                                                                                |
| v/c Ratio                         | 0.60                                                                              | 0.40                                                                              | 0.14                                                                              |                                                                                   | 0.58                                                                              | 0.27                                                                              | 0.44                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.36                                                                                | 0.14                                                                                |
| Uniform Delay, d1                 | 32.6                                                                              | 13.9                                                                              | 12.1                                                                              |                                                                                   | 34.9                                                                              | 33.6                                                                              | 16.2                                                                              |                                                                                     |                                                                                     |                                                                                     | 24.6                                                                                | 23.1                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 3.5                                                                               | 0.2                                                                               | 0.1                                                                               |                                                                                   | 4.3                                                                               | 0.7                                                                               | 0.9                                                                               |                                                                                     |                                                                                     |                                                                                     | 2.2                                                                                 | 0.7                                                                                 |
| Delay (s)                         | 36.2                                                                              | 14.1                                                                              | 12.2                                                                              |                                                                                   | 39.2                                                                              | 34.4                                                                              | 17.1                                                                              |                                                                                     |                                                                                     |                                                                                     | 26.8                                                                                | 23.7                                                                                |
| Level of Service                  | D                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | C                                                                                 | B                                                                                 |                                                                                     |                                                                                     |                                                                                     | C                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 17.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 21.2                                                                              |                                                                                     |                                                                                     |                                                                                     | 25.2                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 20.2                                                                              | HCM 2000 Level of Service                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.43                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 82.6                                                                              | Sum of lost time (s)                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 44.6%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |                                                                                   |  |                                                                                   |  |  |  |                                                                                   |  |                                                                                   |  |  |                                                                                     |
| Traffic Volume (veh/h)                                               | 50                                                                                | 109                                                                               | 37                                                                                | 360                                                                               | 93                                                                                | 36                                                                                | 10                                                                                | 298                                                                               | 180                                                                               | 79                                                                                  | 339                                                                                 | 36                                                                                  |
| Future Volume (veh/h)                                                | 50                                                                                | 109                                                                               | 37                                                                                | 360                                                                               | 93                                                                                | 36                                                                                | 10                                                                                | 298                                                                               | 180                                                                               | 79                                                                                  | 339                                                                                 | 36                                                                                  |
| Number                                                               | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1900                                                                              | 1859                                                                              | 1900                                                                              | 1900                                                                              | 1877                                                                              | 1900                                                                              | 1900                                                                              | 1831                                                                              | 1900                                                                              | 1881                                                                                | 1818                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                 | 53                                                                                | 115                                                                               | 39                                                                                | 238                                                                               | 295                                                                               | 0                                                                                 | 11                                                                                | 314                                                                               | 189                                                                               | 83                                                                                  | 357                                                                                 | 38                                                                                  |
| Adj No. of Lanes                                                     | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                 | 4                                                                                 | 4                                                                                 | 4                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 1                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                                                           | 83                                                                                | 187                                                                               | 66                                                                                | 757                                                                               | 786                                                                               | 676                                                                               | 58                                                                                | 668                                                                               | 385                                                                               | 274                                                                                 | 525                                                                                 | 56                                                                                  |
| Arrive On Green                                                      | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              | 0.42                                                                              | 0.42                                                                              | 0.00                                                                              | 0.32                                                                              | 0.32                                                                              | 0.32                                                                              | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h                                                      | 880                                                                               | 1978                                                                              | 693                                                                               | 1810                                                                              | 1877                                                                              | 1615                                                                              | 24                                                                                | 2056                                                                              | 1186                                                                              | 901                                                                                 | 1616                                                                                | 172                                                                                 |
| Grp Volume(v), veh/h                                                 | 109                                                                               | 0                                                                                 | 98                                                                                | 238                                                                               | 295                                                                               | 0                                                                                 | 282                                                                               | 0                                                                                 | 232                                                                               | 83                                                                                  | 0                                                                                   | 395                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             | 1815                                                                              | 0                                                                                 | 1736                                                                              | 1810                                                                              | 1877                                                                              | 1615                                                                              | 1809                                                                              | 0                                                                                 | 1457                                                                              | 901                                                                                 | 0                                                                                   | 1788                                                                                |
| Q Serve(g_s), s                                                      | 4.3                                                                               | 0.0                                                                               | 4.0                                                                               | 6.5                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 9.5                                                                               | 6.0                                                                                 | 0.0                                                                                 | 14.2                                                                                |
| Cycle Q Clear(g_c), s                                                | 4.3                                                                               | 0.0                                                                               | 4.0                                                                               | 6.5                                                                               | 8.0                                                                               | 0.0                                                                               | 9.1                                                                               | 0.0                                                                               | 9.5                                                                               | 15.5                                                                                | 0.0                                                                                 | 14.2                                                                                |
| Prop In Lane                                                         | 0.49                                                                              |                                                                                   | 0.40                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.04                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                                |                                                                                     | 0.10                                                                                |
| Lane Grp Cap(c), veh/h                                               | 172                                                                               | 0                                                                                 | 165                                                                               | 757                                                                               | 786                                                                               | 676                                                                               | 638                                                                               | 0                                                                                 | 473                                                                               | 274                                                                                 | 0                                                                                   | 581                                                                                 |
| V/C Ratio(X)                                                         | 0.64                                                                              | 0.00                                                                              | 0.59                                                                              | 0.31                                                                              | 0.38                                                                              | 0.00                                                                              | 0.44                                                                              | 0.00                                                                              | 0.49                                                                              | 0.30                                                                                | 0.00                                                                                | 0.68                                                                                |
| Avail Cap(c_a), veh/h                                                | 441                                                                               | 0                                                                                 | 422                                                                               | 757                                                                               | 786                                                                               | 676                                                                               | 995                                                                               | 0                                                                                 | 767                                                                               | 456                                                                                 | 0                                                                                   | 941                                                                                 |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 32.3                                                                              | 0.0                                                                               | 32.2                                                                              | 14.4                                                                              | 14.9                                                                              | 0.0                                                                               | 20.0                                                                              | 0.0                                                                               | 20.1                                                                              | 26.3                                                                                | 0.0                                                                                 | 21.7                                                                                |
| Incr Delay (d2), s/veh                                               | 3.9                                                                               | 0.0                                                                               | 3.4                                                                               | 1.1                                                                               | 1.4                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 0.8                                                                               | 0.6                                                                                 | 0.0                                                                                 | 1.4                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 2.3                                                                               | 0.0                                                                               | 2.1                                                                               | 3.5                                                                               | 4.4                                                                               | 0.0                                                                               | 4.7                                                                               | 0.0                                                                               | 3.9                                                                               | 1.5                                                                                 | 0.0                                                                                 | 7.2                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 36.2                                                                              | 0.0                                                                               | 35.6                                                                              | 15.5                                                                              | 16.2                                                                              | 0.0                                                                               | 20.4                                                                              | 0.0                                                                               | 20.9                                                                              | 26.9                                                                                | 0.0                                                                                 | 23.1                                                                                |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   |                                                                                     | C                                                                                   |
| Approach Vol, veh/h                                                  | 207                                                                               |                                                                                   |                                                                                   | 533                                                                               |                                                                                   |                                                                                   | 514                                                                               |                                                                                   |                                                                                   | 478                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 35.9                                                                              |                                                                                   |                                                                                   | 15.9                                                                              |                                                                                   |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                   | 23.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             | 11.0                                                                              |                                                                                   |                                                                                   | 28.1                                                                              |                                                                                   |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                   | 28.1                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          | 18.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                                |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         | 6.3                                                                               |                                                                                   |                                                                                   | 17.5                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.5                                                                                |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              | 0.8                                                                               |                                                                                   |                                                                                   | 6.5                                                                               |                                                                                   |                                                                                   | 2.4                                                                               |                                                                                   |                                                                                   | 7.1                                                                                 |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   |                                                                                   | 21.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
9: Pacific Avenue & Cathcart Street

## Intersection

Intersection Delay, s/veh 8.8

Intersection LOS A

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |      |      |      |      |
| Traffic Vol, veh/h  | 0    | 12   | 79   | 38   | 0    | 50   | 74   | 27   | 0    | 21   | 88   | 54   | 0    | 0    | 0    | 0    |
| Future Vol, veh/h   | 0    | 12   | 79   | 38   | 0    | 50   | 74   | 27   | 0    | 21   | 88   | 54   | 0    | 0    | 0    | 0    |
| Peak Hour Factor    | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 |
| Heavy Vehicles, %   | 2    | 0    | 0    | 2    | 2    | 22   | 2    | 14   | 2    | 0    | 1    | 9    | 2    | 0    | 0    | 0    |
| Mvmt Flow           | 0    | 13   | 87   | 42   | 0    | 55   | 81   | 30   | 0    | 23   | 97   | 59   | 0    | 0    | 0    | 0    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  |     |
| Opposing Lanes             | 1   | 1   | 0   |
| Conflicting Approach Left  |     | NB  | EB  |
| Conflicting Lanes Left     | 0   | 1   | 1   |
| Conflicting Approach Right | NB  |     | WB  |
| Conflicting Lanes Right    | 1   | 0   | 1   |
| HCM Control Delay          | 8.3 | 9.2 | 8.7 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, %            | 13%   | 9%    | 33%   |
| Vol Thru, %            | 54%   | 61%   | 49%   |
| Vol Right, %           | 33%   | 29%   | 18%   |
| Sign Control           | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 163   | 129   | 151   |
| LT Vol                 | 21    | 12    | 50    |
| Through Vol            | 88    | 79    | 74    |
| RT Vol                 | 54    | 38    | 27    |
| Lane Flow Rate         | 179   | 142   | 166   |
| Geometry Grp           | 1     | 1     | 1     |
| Degree of Util (X)     | 0.221 | 0.171 | 0.221 |
| Departure Headway (Hd) | 4.444 | 4.355 | 4.803 |
| Convergence, Y/N       | Yes   | Yes   | Yes   |
| Cap                    | 810   | 824   | 748   |
| Service Time           | 2.466 | 2.382 | 2.829 |
| HCM Lane V/C Ratio     | 0.221 | 0.172 | 0.222 |
| HCM Control Delay      | 8.7   | 8.3   | 9.2   |
| HCM Lane LOS           | A     | A     | A     |
| HCM 95th-tile Q        | 0.8   | 0.6   | 0.8   |

| Intersection             |        |                                                                                   |                                                                                   |      |      |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|
| Int Delay, s/veh         | 3.6    |                                                                                   |                                                                                   |      |      |      |
| Movement                 | WBL    | WBR                                                                               | NBT                                                                               | NBR  | SBL  | SBT  |
| Lane Configurations      |        |  |  |      |      |      |
| Traffic Vol, veh/h       | 1      | 142                                                                               | 128                                                                               | 133  | 0    | 0    |
| Future Vol, veh/h        | 1      | 142                                                                               | 128                                                                               | 133  | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free | Free | Free |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -    | None |
| Storage Length           | -      | 0                                                                                 | -                                                                                 | -    | -    | -    |
| Veh in Median Storage, # | 0      | -                                                                                 | 0                                                                                 | -    | -    | -    |
| Grade, %                 | 0      | -                                                                                 | 0                                                                                 | -    | -    | 0    |
| Peak Hour Factor         | 92     | 92                                                                                | 92                                                                                | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 2                                                                                 | 1    | 0    | 0    |
| Mvmt Flow                | 1      | 154                                                                               | 139                                                                               | 145  | 0    | 0    |
| Major/Minor              | Minor1 | Major1                                                                            |                                                                                   |      |      |      |
| Conflicting Flow All     | 211    | 211                                                                               | 0                                                                                 | 0    |      |      |
| Stage 1                  | 211    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy            | 6.4    | 6.2                                                                               | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 1      | 5.4    | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Follow-up Hdwy           | 3.5    | 3.3                                                                               | -                                                                                 | -    |      |      |
| Pot Cap-1 Maneuver       | 782    | 834                                                                               | -                                                                                 | -    |      |      |
| Stage 1                  | 829    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Platoon blocked, %       |        |                                                                                   | -                                                                                 | -    |      |      |
| Mov Cap-1 Maneuver       | 782    | 834                                                                               | -                                                                                 | -    |      |      |
| Mov Cap-2 Maneuver       | 782    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 1                  | 829    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Approach                 | WB     | NB                                                                                |                                                                                   |      |      |      |
| HCM Control Delay, s     | 10.3   | 0                                                                                 |                                                                                   |      |      |      |
| HCM LOS                  | B      |                                                                                   |                                                                                   |      |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBR                                                                               | WBLn1                                                                             |      |      |      |
| Capacity (veh/h)         | -      | -                                                                                 | 834                                                                               |      |      |      |
| HCM Lane V/C Ratio       | -      | -                                                                                 | 0.185                                                                             |      |      |      |
| HCM Control Delay (s)    | -      | -                                                                                 | 10.3                                                                              |      |      |      |
| HCM Lane LOS             | -      | -                                                                                 | B                                                                                 |      |      |      |
| HCM 95th %tile Q(veh)    | -      | -                                                                                 | 0.7                                                                               |      |      |      |

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Existing  
PM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 343                                                                               | 731                                                                               | 111                                                                               | 112                                                                               | 553                                                                               | 227                                                                               | 120                                                                                | 553                                                                                 | 98                                                                                  | 290                                                                                 | 856                                                                                 | 344                                                                                 |
| Future Volume (veh/h)        | 343                                                                               | 731                                                                               | 111                                                                               | 112                                                                               | 553                                                                               | 227                                                                               | 120                                                                                | 553                                                                                 | 98                                                                                  | 290                                                                                 | 856                                                                                 | 344                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1881                                                                                | 1881                                                                                | 1881                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 357                                                                               | 761                                                                               | 116                                                                               | 117                                                                               | 576                                                                               | 0                                                                                 | 125                                                                                | 576                                                                                 | 102                                                                                 | 302                                                                                 | 892                                                                                 | 0                                                                                   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 447                                                                               | 1016                                                                              | 155                                                                               | 148                                                                               | 996                                                                               | 450                                                                               | 157                                                                                | 832                                                                                 | 372                                                                                 | 343                                                                                 | 1219                                                                                | 535                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.33                                                                              | 0.33                                                                              | 0.08                                                                              | 0.28                                                                              | 0.00                                                                              | 0.09                                                                               | 0.23                                                                                | 0.23                                                                                | 0.19                                                                                | 0.34                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3111                                                                              | 474                                                                               | 1810                                                                              | 3574                                                                              | 1615                                                                              | 1810                                                                               | 3574                                                                                | 1599                                                                                | 1792                                                                                | 3610                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 357                                                                               | 437                                                                               | 440                                                                               | 117                                                                               | 576                                                                               | 0                                                                                 | 125                                                                                | 576                                                                                 | 102                                                                                 | 302                                                                                 | 892                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1787                                                                              | 1798                                                                              | 1810                                                                              | 1787                                                                              | 1615                                                                              | 1810                                                                               | 1787                                                                                | 1599                                                                                | 1792                                                                                | 1805                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 9.6                                                                               | 20.8                                                                              | 20.9                                                                              | 6.1                                                                               | 13.3                                                                              | 0.0                                                                               | 6.5                                                                                | 14.1                                                                                | 5.0                                                                                 | 15.7                                                                                | 20.8                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.6                                                                               | 20.8                                                                              | 20.9                                                                              | 6.1                                                                               | 13.3                                                                              | 0.0                                                                               | 6.5                                                                                | 14.1                                                                                | 5.0                                                                                 | 15.7                                                                                | 20.8                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.26                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 447                                                                               | 584                                                                               | 587                                                                               | 148                                                                               | 996                                                                               | 450                                                                               | 157                                                                                | 832                                                                                 | 372                                                                                 | 343                                                                                 | 1219                                                                                | 535                                                                                 |
| V/C Ratio(X)                 | 0.80                                                                              | 0.75                                                                              | 0.75                                                                              | 0.79                                                                              | 0.58                                                                              | 0.00                                                                              | 0.80                                                                               | 0.69                                                                                | 0.27                                                                                | 0.88                                                                                | 0.73                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 684                                                                               | 710                                                                               | 714                                                                               | 246                                                                               | 1196                                                                              | 541                                                                               | 265                                                                                | 935                                                                                 | 418                                                                                 | 525                                                                                 | 1472                                                                                | 646                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 40.4                                                                              | 28.7                                                                              | 28.7                                                                              | 43.1                                                                              | 29.7                                                                              | 0.0                                                                               | 42.8                                                                               | 33.6                                                                                | 30.1                                                                                | 37.6                                                                                | 27.9                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 3.9                                                                               | 3.5                                                                               | 3.5                                                                               | 9.1                                                                               | 0.5                                                                               | 0.0                                                                               | 8.8                                                                                | 1.9                                                                                 | 0.4                                                                                 | 10.7                                                                                | 1.5                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.8                                                                               | 10.8                                                                              | 10.8                                                                              | 3.4                                                                               | 6.6                                                                               | 0.0                                                                               | 3.6                                                                                | 7.2                                                                                 | 2.2                                                                                 | 8.7                                                                                 | 10.5                                                                                | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 44.3                                                                              | 32.2                                                                              | 32.2                                                                              | 52.2                                                                              | 30.2                                                                              | 0.0                                                                               | 51.7                                                                               | 35.5                                                                                | 30.5                                                                                | 48.2                                                                                | 29.4                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                  | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 1234                                                                              |                                                                                   |                                                                                   | 693                                                                               |                                                                                   |                                                                                   |                                                                                    | 803                                                                                 |                                                                                     |                                                                                     | 1194                                                                                |                                                                                     |
| Approach Delay, s/veh        | 35.7                                                                              |                                                                                   |                                                                                   | 33.9                                                                              |                                                                                   |                                                                                   |                                                                                    | 37.4                                                                                |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.8                                                                              | 35.2                                                                              | 12.3                                                                              | 36.3                                                                              | 16.4                                                                              | 30.6                                                                              | 22.3                                                                               | 26.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.0                                                                              | 38.0                                                                              | 14.0                                                                              | 39.0                                                                              | 19.0                                                                              | 32.0                                                                              | 28.0                                                                               | 25.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.1                                                                               | 22.9                                                                              | 8.5                                                                               | 22.8                                                                              | 11.6                                                                              | 15.3                                                                              | 17.7                                                                               | 16.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 8.4                                                                               | 0.1                                                                               | 9.5                                                                               | 0.8                                                                               | 8.9                                                                               | 0.7                                                                                | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 35.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

|                               |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations           |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)        | 227                                                                               | 1320                                                                              | 77                                                                                | 293                                                                               | 1262                                                                              | 472                                                                               | 102                                                                               | 246                                                                               | 423                                                                               | 648                                                                                 | 309                                                                                 | 247                                                                                 |
| Future Volume (veh/h)         | 227                                                                               | 1320                                                                              | 77                                                                                | 293                                                                               | 1262                                                                              | 472                                                                               | 102                                                                               | 246                                                                               | 423                                                                               | 648                                                                                 | 309                                                                                 | 247                                                                                 |
| Number                        | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh           | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)           | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln        | 1881                                                                              | 1847                                                                              | 1900                                                                              | 1845                                                                              | 1863                                                                              | 1810                                                                              | 1881                                                                              | 1845                                                                              | 1881                                                                              | 1863                                                                                | 1845                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h          | 241                                                                               | 1404                                                                              | 0                                                                                 | 312                                                                               | 1343                                                                              | 0                                                                                 | 109                                                                               | 262                                                                               | 450                                                                               | 689                                                                                 | 329                                                                                 | 263                                                                                 |
| Adj No. of Lanes              | 1                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %          | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 2                                                                                 | 5                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                   | 3                                                                                   | 2                                                                                   |
| Cap, veh/h                    | 260                                                                               | 1922                                                                              | 0                                                                                 | 353                                                                               | 1727                                                                              | 522                                                                               | 341                                                                               | 352                                                                               | 536                                                                               | 833                                                                                 | 447                                                                                 | 383                                                                                 |
| Arrive On Green               | 0.15                                                                              | 0.38                                                                              | 0.00                                                                              | 0.10                                                                              | 0.34                                                                              | 0.00                                                                              | 0.19                                                                              | 0.19                                                                              | 0.19                                                                              | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h               | 1792                                                                              | 5208                                                                              | 0                                                                                 | 3408                                                                              | 5085                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 2814                                                                              | 3442                                                                                | 1845                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h          | 241                                                                               | 1404                                                                              | 0                                                                                 | 312                                                                               | 1343                                                                              | 0                                                                                 | 109                                                                               | 262                                                                               | 450                                                                               | 689                                                                                 | 329                                                                                 | 263                                                                                 |
| Grp Sat Flow(s),veh/h/ln      | 1792                                                                              | 1680                                                                              | 0                                                                                 | 1704                                                                              | 1695                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 1407                                                                              | 1721                                                                                | 1845                                                                                | 1583                                                                                |
| Q Serve(g_s), s               | 25.8                                                                              | 46.4                                                                              | 0.0                                                                               | 17.5                                                                              | 46.0                                                                              | 0.0                                                                               | 10.2                                                                              | 26.0                                                                              | 29.9                                                                              | 36.8                                                                                | 31.9                                                                                | 29.3                                                                                |
| Cycle Q Clear(g_c), s         | 25.8                                                                              | 46.4                                                                              | 0.0                                                                               | 17.5                                                                              | 46.0                                                                              | 0.0                                                                               | 10.2                                                                              | 26.0                                                                              | 29.9                                                                              | 36.8                                                                                | 31.9                                                                                | 29.3                                                                                |
| Prop In Lane                  | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h        | 260                                                                               | 1922                                                                              | 0                                                                                 | 353                                                                               | 1727                                                                              | 522                                                                               | 341                                                                               | 352                                                                               | 536                                                                               | 833                                                                                 | 447                                                                                 | 383                                                                                 |
| V/C Ratio(X)                  | 0.93                                                                              | 0.73                                                                              | 0.00                                                                              | 0.88                                                                              | 0.78                                                                              | 0.00                                                                              | 0.32                                                                              | 0.75                                                                              | 0.84                                                                              | 0.83                                                                                | 0.74                                                                                | 0.69                                                                                |
| Avail Cap(c_a), veh/h         | 323                                                                               | 1922                                                                              | 0                                                                                 | 456                                                                               | 1727                                                                              | 522                                                                               | 341                                                                               | 352                                                                               | 536                                                                               | 833                                                                                 | 447                                                                                 | 383                                                                                 |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)            | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh      | 81.9                                                                              | 51.5                                                                              | 0.0                                                                               | 85.8                                                                              | 57.5                                                                              | 0.0                                                                               | 67.7                                                                              | 74.1                                                                              | 75.7                                                                              | 69.7                                                                                | 67.9                                                                                | 66.9                                                                                |
| Incr Delay (d2), s/veh        | 28.3                                                                              | 2.5                                                                               | 0.0                                                                               | 15.0                                                                              | 3.5                                                                               | 0.0                                                                               | 2.5                                                                               | 13.4                                                                              | 14.6                                                                              | 9.2                                                                                 | 10.4                                                                                | 9.6                                                                                 |
| Initial Q Delay(d3),s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln      | 14.8                                                                              | 22.0                                                                              | 0.0                                                                               | 9.0                                                                               | 22.1                                                                              | 0.0                                                                               | 5.3                                                                               | 14.6                                                                              | 12.7                                                                              | 18.6                                                                                | 17.6                                                                                | 13.9                                                                                |
| LnGrp Delay(d),s/veh          | 110.2                                                                             | 54.0                                                                              | 0.0                                                                               | 100.9                                                                             | 61.0                                                                              | 0.0                                                                               | 70.2                                                                              | 87.5                                                                              | 90.3                                                                              | 78.9                                                                                | 78.2                                                                                | 76.5                                                                                |
| LnGrp LOS                     | F                                                                                 | D                                                                                 |                                                                                   | F                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | F                                                                                 | E                                                                                   | E                                                                                   | E                                                                                   |
| Approach Vol, veh/h           | 1645                                                                              |                                                                                   |                                                                                   | 1655                                                                              |                                                                                   |                                                                                   | 821                                                                               |                                                                                   |                                                                                   | 1281                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh         | 62.2                                                                              |                                                                                   |                                                                                   | 68.5                                                                              |                                                                                   |                                                                                   | 86.7                                                                              |                                                                                   |                                                                                   | 78.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                  | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     |
| Timer                         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                  | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s      | 34.1                                                                              | 78.0                                                                              |                                                                                   | 41.0                                                                              | 32.2                                                                              | 69.9                                                                              |                                                                                   | 51.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s       | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s   | 20.0                                                                              | 74.0                                                                              |                                                                                   | 37.0                                                                              | 35.0                                                                              | 65.0                                                                              |                                                                                   | 47.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+1.0), s | 19.5                                                                              | 48.4                                                                              |                                                                                   | 31.9                                                                              | 27.8                                                                              | 48.0                                                                              |                                                                                   | 38.8                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s       | 0.6                                                                               | 21.5                                                                              |                                                                                   | 1.8                                                                               | 0.4                                                                               | 15.0                                                                              |                                                                                   | 3.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 71.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                  |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)                                               | 1312                                                                              | 486                                                                               | 66                                                                                | 11                                                                                | 412                                                                               | 30                                                                                | 74                                                                                | 276                                                                               | 19                                                                                | 42                                                                                  | 258                                                                                 | 1380                                                                                |
| Future Volume (veh/h)                                                | 1312                                                                              | 486                                                                               | 66                                                                                | 11                                                                                | 412                                                                               | 30                                                                                | 74                                                                                | 276                                                                               | 19                                                                                | 42                                                                                  | 258                                                                                 | 1380                                                                                |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1881                                                                              | 1882                                                                              | 1900                                                                              | 1900                                                                              | 1850                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 | 1353                                                                              | 501                                                                               | 68                                                                                | 11                                                                                | 425                                                                               | 0                                                                                 | 76                                                                                | 285                                                                               | 20                                                                                | 43                                                                                  | 266                                                                                 | 1423                                                                                |
| Adj No. of Lanes                                                     | 2                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 2                                                                                   |
| Peak Hour Factor                                                     | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           | 1237                                                                              | 561                                                                               | 76                                                                                | 13                                                                                | 539                                                                               | 0                                                                                 | 100                                                                               | 1112                                                                              | 78                                                                                | 56                                                                                  | 1083                                                                                | 1263                                                                                |
| Arrive On Green                                                      | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.15                                                                              | 0.15                                                                              | 0.00                                                                              | 0.06                                                                              | 0.32                                                                              | 0.32                                                                              | 0.03                                                                                | 0.30                                                                                | 0.30                                                                                |
| Sat Flow, veh/h                                                      | 3583                                                                              | 1623                                                                              | 220                                                                               | 87                                                                                | 3608                                                                              | 0                                                                                 | 1792                                                                              | 3424                                                                              | 239                                                                               | 1810                                                                                | 3610                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                                                 | 1353                                                                              | 0                                                                                 | 569                                                                               | 234                                                                               | 202                                                                               | 0                                                                                 | 76                                                                                | 149                                                                               | 156                                                                               | 43                                                                                  | 266                                                                                 | 1423                                                                                |
| Grp Sat Flow(s),veh/h/ln                                             | 1792                                                                              | 0                                                                                 | 1843                                                                              | 1845                                                                              | 1757                                                                              | 0                                                                                 | 1792                                                                              | 1805                                                                              | 1858                                                                              | 1810                                                                                | 1805                                                                                | 1393                                                                                |
| Q Serve(g_s), s                                                      | 38.0                                                                              | 0.0                                                                               | 32.2                                                                              | 13.5                                                                              | 12.1                                                                              | 0.0                                                                               | 4.6                                                                               | 6.7                                                                               | 6.8                                                                               | 2.6                                                                                 | 6.1                                                                                 | 33.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 38.0                                                                              | 0.0                                                                               | 32.2                                                                              | 13.5                                                                              | 12.1                                                                              | 0.0                                                                               | 4.6                                                                               | 6.7                                                                               | 6.8                                                                               | 2.6                                                                                 | 6.1                                                                                 | 33.0                                                                                |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 0.12                                                                              | 0.05                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 1237                                                                              | 0                                                                                 | 637                                                                               | 283                                                                               | 269                                                                               | 0                                                                                 | 100                                                                               | 586                                                                               | 603                                                                               | 56                                                                                  | 1083                                                                                | 1263                                                                                |
| V/C Ratio(X)                                                         | 1.09                                                                              | 0.00                                                                              | 0.89                                                                              | 0.83                                                                              | 0.75                                                                              | 0.00                                                                              | 0.76                                                                              | 0.26                                                                              | 0.26                                                                              | 0.76                                                                                | 0.25                                                                                | 1.13                                                                                |
| Avail Cap(c_a), veh/h                                                | 1237                                                                              | 0                                                                                 | 637                                                                               | 369                                                                               | 351                                                                               | 0                                                                                 | 668                                                                               | 586                                                                               | 603                                                                               | 756                                                                                 | 1083                                                                                | 1263                                                                                |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 36.0                                                                              | 0.0                                                                               | 34.1                                                                              | 45.2                                                                              | 44.6                                                                              | 0.0                                                                               | 51.2                                                                              | 27.4                                                                              | 27.4                                                                              | 52.9                                                                                | 29.1                                                                                | 25.5                                                                                |
| Incr Delay (d2), s/veh                                               | 55.0                                                                              | 0.0                                                                               | 15.1                                                                              | 11.2                                                                              | 6.4                                                                               | 0.0                                                                               | 11.0                                                                              | 0.2                                                                               | 0.2                                                                               | 18.7                                                                                | 0.1                                                                                 | 67.7                                                                                |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 28.2                                                                              | 0.0                                                                               | 18.9                                                                              | 7.8                                                                               | 6.4                                                                               | 0.0                                                                               | 2.6                                                                               | 3.4                                                                               | 3.5                                                                               | 1.6                                                                                 | 3.1                                                                                 | 31.0                                                                                |
| LnGrp Delay(d),s/veh                                                 | 91.0                                                                              | 0.0                                                                               | 49.2                                                                              | 56.4                                                                              | 51.0                                                                              | 0.0                                                                               | 62.2                                                                              | 27.6                                                                              | 27.6                                                                              | 71.6                                                                                | 29.2                                                                                | 93.1                                                                                |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                  | 1922                                                                              |                                                                                   |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 381                                                                               |                                                                                   |                                                                                   | 1732                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 78.6                                                                              |                                                                                   |                                                                                   | 53.9                                                                              |                                                                                   |                                                                                   | 34.5                                                                              |                                                                                   |                                                                                   | 82.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 20.9                                                                              | 10.2                                                                              | 37.0                                                                              |                                                                                   | 42.0                                                                              | 7.4                                                                               | 39.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   | 22.0                                                                              | 41.0                                                                              | 33.0                                                                              |                                                                                   | 38.0                                                                              | 46.0                                                                              | 28.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 15.5                                                                              | 6.6                                                                               | 35.0                                                                              |                                                                                   | 40.0                                                                              | 4.6                                                                               | 8.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   | 1.4                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.1                                                                               | 1.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 74.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
1: Front Street & Laurel Street

APPENDIX F

Existing + Project  
AM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 48                                                                                | 337                                                                               | 10                                                                                | 246                                                                               | 448                                                                               | 89                                                                                | 5                                                                                   | 145                                                                                 | 168                                                                                 | 44                                                                                  | 156                                                                                 | 90                                                                                  |
| Future Volume (veh/h)        | 48                                                                                | 337                                                                               | 10                                                                                | 246                                                                               | 448                                                                               | 89                                                                                | 5                                                                                   | 145                                                                                 | 168                                                                                 | 44                                                                                  | 156                                                                                 | 90                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1810                                                                              | 1852                                                                              | 1900                                                                              | 1845                                                                              | 1863                                                                              | 1845                                                                              | 1583                                                                                | 1827                                                                                | 1881                                                                                | 1743                                                                                | 1827                                                                                | 1792                                                                                |
| Adj Flow Rate, veh/h         | 52                                                                                | 366                                                                               | 11                                                                                | 267                                                                               | 487                                                                               | 97                                                                                | 5                                                                                   | 158                                                                                 | 183                                                                                 | 48                                                                                  | 170                                                                                 | 98                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 5                                                                                 | 2                                                                                 | 2                                                                                 | 3                                                                                 | 2                                                                                 | 3                                                                                 | 20                                                                                  | 4                                                                                   | 1                                                                                   | 9                                                                                   | 4                                                                                   | 6                                                                                   |
| Cap, veh/h                   | 372                                                                               | 1441                                                                              | 43                                                                                | 316                                                                               | 703                                                                               | 592                                                                               | 8                                                                                   | 286                                                                                 | 250                                                                                 | 58                                                                                  | 340                                                                                 | 284                                                                                 |
| Arrive On Green              | 0.22                                                                              | 0.41                                                                              | 0.41                                                                              | 0.18                                                                              | 0.38                                                                              | 0.38                                                                              | 0.01                                                                                | 0.16                                                                                | 0.16                                                                                | 0.03                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1723                                                                              | 3489                                                                              | 105                                                                               | 1757                                                                              | 1863                                                                              | 1568                                                                              | 1508                                                                                | 1827                                                                                | 1599                                                                                | 1660                                                                                | 1827                                                                                | 1524                                                                                |
| Grp Volume(v), veh/h         | 52                                                                                | 184                                                                               | 193                                                                               | 267                                                                               | 487                                                                               | 97                                                                                | 5                                                                                   | 158                                                                                 | 183                                                                                 | 48                                                                                  | 170                                                                                 | 98                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1723                                                                              | 1760                                                                              | 1834                                                                              | 1757                                                                              | 1863                                                                              | 1568                                                                              | 1508                                                                                | 1827                                                                                | 1599                                                                                | 1660                                                                                | 1827                                                                                | 1524                                                                                |
| Q Serve(g_s), s              | 1.8                                                                               | 5.1                                                                               | 5.1                                                                               | 10.9                                                                              | 16.4                                                                              | 3.0                                                                               | 0.2                                                                                 | 5.9                                                                                 | 8.1                                                                                 | 2.1                                                                                 | 6.2                                                                                 | 4.2                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 5.1                                                                               | 5.1                                                                               | 10.9                                                                              | 16.4                                                                              | 3.0                                                                               | 0.2                                                                                 | 5.9                                                                                 | 8.1                                                                                 | 2.1                                                                                 | 6.2                                                                                 | 4.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 372                                                                               | 727                                                                               | 757                                                                               | 316                                                                               | 703                                                                               | 592                                                                               | 8                                                                                   | 286                                                                                 | 250                                                                                 | 58                                                                                  | 340                                                                                 | 284                                                                                 |
| V/C Ratio(X)                 | 0.14                                                                              | 0.25                                                                              | 0.25                                                                              | 0.84                                                                              | 0.69                                                                              | 0.16                                                                              | 0.63                                                                                | 0.55                                                                                | 0.73                                                                                | 0.83                                                                                | 0.50                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 372                                                                               | 727                                                                               | 757                                                                               | 497                                                                               | 703                                                                               | 592                                                                               | 81                                                                                  | 394                                                                                 | 345                                                                                 | 89                                                                                  | 394                                                                                 | 328                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 23.5                                                                              | 14.3                                                                              | 14.3                                                                              | 29.4                                                                              | 19.5                                                                              | 15.3                                                                              | 36.8                                                                                | 28.9                                                                                | 29.8                                                                                | 35.6                                                                                | 27.1                                                                                | 26.3                                                                                |
| Incr Delay (d2), s/veh       | 0.8                                                                               | 0.8                                                                               | 0.8                                                                               | 7.7                                                                               | 5.6                                                                               | 0.6                                                                               | 60.6                                                                                | 1.7                                                                                 | 5.0                                                                                 | 29.3                                                                                | 1.1                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 2.6                                                                               | 2.7                                                                               | 5.9                                                                               | 9.5                                                                               | 1.4                                                                               | 0.2                                                                                 | 3.1                                                                                 | 3.9                                                                                 | 1.4                                                                                 | 3.2                                                                                 | 1.8                                                                                 |
| LnGrp Delay(d),s/veh         | 24.3                                                                              | 15.1                                                                              | 15.1                                                                              | 37.1                                                                              | 25.0                                                                              | 15.9                                                                              | 97.4                                                                                | 30.6                                                                                | 34.8                                                                                | 64.9                                                                                | 28.2                                                                                | 27.0                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 429                                                                               |                                                                                   |                                                                                   | 851                                                                               |                                                                                   |                                                                                     | 346                                                                                 |                                                                                     |                                                                                     | 316                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                   | 27.8                                                                              |                                                                                   |                                                                                     | 33.8                                                                                |                                                                                     |                                                                                     | 33.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.3                                                                              | 34.7                                                                              | 4.4                                                                               | 17.8                                                                              | 20.0                                                                              | 32.0                                                                              | 6.6                                                                                 | 15.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 21.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                              | 16.0                                                                              | 28.0                                                                              | 4.0                                                                                 | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.9                                                                              | 7.1                                                                               | 2.2                                                                               | 8.2                                                                               | 3.8                                                                               | 18.4                                                                              | 4.1                                                                                 | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 5.3                                                                               | 0.0                                                                               | 1.8                                                                               | 0.1                                                                               | 4.0                                                                               | 0.0                                                                                 | 1.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 27.2                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Existing + Project  
AM Peak

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                   |                                                                                   |  |                                                                                     |
| Traffic Volume (veh/h)       | 22                                                                                | 345                                                                               | 14                                                                                | 34                                                                                | 476                                                                               | 28                                                                                | 33                                                                                | 31                                                                                | 28                                                                                | 20                                                                                | 17                                                                                  | 26                                                                                  |
| Future Volume (veh/h)        | 22                                                                                | 345                                                                               | 14                                                                                | 34                                                                                | 476                                                                               | 28                                                                                | 33                                                                                | 31                                                                                | 28                                                                                | 20                                                                                | 17                                                                                  | 26                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                 | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1520                                                                              | 1872                                                                              | 1900                                                                              | 1845                                                                              | 1862                                                                              | 1900                                                                              | 1900                                                                              | 1544                                                                              | 1900                                                                              | 1900                                                                              | 1611                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 26                                                                                | 401                                                                               | 16                                                                                | 40                                                                                | 553                                                                               | 33                                                                                | 38                                                                                | 36                                                                                | 33                                                                                | 23                                                                                | 20                                                                                  | 30                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         | 25                                                                                | 1                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 13                                                                                | 13                                                                                | 13                                                                                | 13                                                                                  | 13                                                                                  |
| Cap, veh/h                   | 85                                                                                | 947                                                                               | 38                                                                                | 103                                                                               | 921                                                                               | 55                                                                                | 447                                                                               | 175                                                                               | 160                                                                               | 143                                                                               | 118                                                                                 | 134                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h              | 1448                                                                              | 1788                                                                              | 71                                                                                | 1757                                                                              | 1740                                                                              | 104                                                                               | 1376                                                                              | 743                                                                               | 681                                                                               | 314                                                                               | 501                                                                                 | 569                                                                                 |
| Grp Volume(v), veh/h         | 26                                                                                | 0                                                                                 | 417                                                                               | 40                                                                                | 0                                                                                 | 586                                                                               | 38                                                                                | 0                                                                                 | 69                                                                                | 73                                                                                | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1448                                                                              | 0                                                                                 | 1859                                                                              | 1757                                                                              | 0                                                                                 | 1843                                                                              | 1376                                                                              | 0                                                                                 | 1424                                                                              | 1384                                                                              | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.2                                                                               | 0.0                                                                               | 9.3                                                                               | 1.5                                                                               | 0.0                                                                               | 14.9                                                                              | 0.0                                                                               | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.2                                                                               | 0.0                                                                               | 9.3                                                                               | 1.5                                                                               | 0.0                                                                               | 14.9                                                                              | 1.1                                                                               | 0.0                                                                               | 2.6                                                                               | 2.7                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 0.48                                                                              | 0.32                                                                              |                                                                                     | 0.41                                                                                |
| Lane Grp Cap(c), veh/h       | 85                                                                                | 0                                                                                 | 984                                                                               | 103                                                                               | 0                                                                                 | 976                                                                               | 447                                                                               | 0                                                                                 | 335                                                                               | 395                                                                               | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.31                                                                              | 0.00                                                                              | 0.42                                                                              | 0.39                                                                              | 0.00                                                                              | 0.60                                                                              | 0.09                                                                              | 0.00                                                                              | 0.21                                                                              | 0.18                                                                              | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 341                                                                               | 0                                                                                 | 984                                                                               | 413                                                                               | 0                                                                                 | 976                                                                               | 447                                                                               | 0                                                                                 | 335                                                                               | 395                                                                               | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 30.7                                                                              | 0.0                                                                               | 9.7                                                                               | 30.8                                                                              | 0.0                                                                               | 11.0                                                                              | 20.3                                                                              | 0.0                                                                               | 20.9                                                                              | 20.9                                                                              | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.0                                                                               | 1.3                                                                               | 2.4                                                                               | 0.0                                                                               | 2.7                                                                               | 0.4                                                                               | 0.0                                                                               | 1.4                                                                               | 1.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 0.0                                                                               | 5.0                                                                               | 0.8                                                                               | 0.0                                                                               | 8.2                                                                               | 0.6                                                                               | 0.0                                                                               | 1.2                                                                               | 1.2                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 32.7                                                                              | 0.0                                                                               | 11.0                                                                              | 33.2                                                                              | 0.0                                                                               | 13.8                                                                              | 20.7                                                                              | 0.0                                                                               | 22.3                                                                              | 21.9                                                                              | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                 |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 443                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 626                                                                               |                                                                                   | 107                                                                               |                                                                                   | 73                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 12.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   | 21.7                                                                              |                                                                                   | 21.9                                                                              |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.0                                                                               | 40.0                                                                              |                                                                                   |                                                                                   | 20.0                                                                              | 8.0                                                                               | 40.0                                                                              | 20.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Max Green Setting (G_max), s | 10.0                                                                              | 36.0                                                                              |                                                                                   |                                                                                   | 16.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I), s  | 13.5                                                                              | 11.3                                                                              |                                                                                   |                                                                                   | 4.7                                                                               | 3.2                                                                               | 16.9                                                                              | 4.6                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   | 0.6                                                                               | 0.0                                                                               | 6.6                                                                               | 0.6                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                              |  |  |  |  |                                                                                    |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                                                                                                                 | SBR                                                                               |   |      |
| Lane Configurations          |  |  |  |  |   |                                                                                   |   |      |
| Traffic Volume (veh/h)       | 48                                                                                | 21                                                                                | 22                                                                                | 316                                                                               | 308                                                                                                                                                                 | 73                                                                                |   |      |
| Future Volume (veh/h)        | 48                                                                                | 21                                                                                | 22                                                                                | 316                                                                               | 308                                                                                                                                                                 | 73                                                                                |   |      |
| Number                       | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                                                                                                   | 14                                                                                |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                                                                                                     | 1.00                                                                              |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1638                                                                              | 1810                                                                              | 1712                                                                              | 1743                                                                              | 1706                                                                                                                                                                | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h         | 55                                                                                | 24                                                                                | 25                                                                                | 363                                                                               | 354                                                                                                                                                                 | 84                                                                                |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                                                                                                   | 0                                                                                 |   |      |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                                                                                                                | 0.87                                                                              |   |      |
| Percent Heavy Veh, %         | 16                                                                                | 5                                                                                 | 11                                                                                | 9                                                                                 | 11                                                                                                                                                                  | 11                                                                                |   |      |
| Cap, veh/h                   | 422                                                                               | 416                                                                               | 364                                                                               | 1107                                                                              | 951                                                                                                                                                                 | 223                                                                               |   |      |
| Arrive On Green              | 0.27                                                                              | 0.27                                                                              | 0.22                                                                              | 0.64                                                                              | 0.36                                                                                                                                                                | 0.36                                                                              |   |      |
| Sat Flow, veh/h              | 1560                                                                              | 1538                                                                              | 1630                                                                              | 1743                                                                              | 2692                                                                                                                                                                | 611                                                                               |   |      |
| Grp Volume(v), veh/h         | 55                                                                                | 24                                                                                | 25                                                                                | 363                                                                               | 218                                                                                                                                                                 | 220                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1560                                                                              | 1538                                                                              | 1630                                                                              | 1743                                                                              | 1621                                                                                                                                                                | 1598                                                                              |   |      |
| Q Serve(g_s), s              | 2.3                                                                               | 1.0                                                                               | 1.0                                                                               | 8.2                                                                               | 8.4                                                                                                                                                                 | 8.6                                                                               |   |      |
| Cycle Q Clear(g_c), s        | 2.3                                                                               | 1.0                                                                               | 1.0                                                                               | 8.2                                                                               | 8.4                                                                                                                                                                 | 8.6                                                                               |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                                                                                                     | 0.38                                                                              |   |      |
| Lane Grp Cap(c), veh/h       | 422                                                                               | 416                                                                               | 364                                                                               | 1107                                                                              | 591                                                                                                                                                                 | 583                                                                               |   |      |
| V/C Ratio(X)                 | 0.13                                                                              | 0.06                                                                              | 0.07                                                                              | 0.33                                                                              | 0.37                                                                                                                                                                | 0.38                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 422                                                                               | 416                                                                               | 364                                                                               | 1107                                                                              | 591                                                                                                                                                                 | 583                                                                               |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 23.4                                                                              | 23.0                                                                              | 26.0                                                                              | 7.1                                                                               | 19.8                                                                                                                                                                | 19.9                                                                              |   |      |
| Incr Delay (d2), s/veh       | 0.6                                                                               | 0.3                                                                               | 0.4                                                                               | 0.2                                                                               | 1.8                                                                                                                                                                 | 1.9                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 1.1                                                                               | 0.4                                                                               | 0.5                                                                               | 3.9                                                                               | 4.1                                                                                                                                                                 | 4.1                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 24.1                                                                              | 23.2                                                                              | 26.4                                                                              | 7.3                                                                               | 21.6                                                                                                                                                                | 21.7                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                                                                                                   | C                                                                                 |   |      |
| Approach Vol, veh/h          | 79                                                                                |                                                                                   |                                                                                   | 388                                                                               | 438                                                                                                                                                                 |                                                                                   |   |      |
| Approach Delay, s/veh        | 23.8                                                                              |                                                                                   |                                                                                   | 8.5                                                                               | 21.7                                                                                                                                                                |                                                                                   |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | C                                                                                                                                                                   |                                                                                   |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                   | 6                                                                                 | 7 | 8    |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                                                                                                     |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 27.0                                                                              | 23.0                                                                              | 35.0                                                                              |                                                                                                                                                                     |                                                                                   |   | 58.0 |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                                                                                                     |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s  |                                                                                   | 23.0                                                                              | 19.0                                                                              | 31.0                                                                              |                                                                                                                                                                     |                                                                                   |   | 54.0 |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 4.3                                                                               | 3.0                                                                               | 10.6                                                                              |                                                                                                                                                                     |                                                                                   |   | 10.2 |
| Green Ext Time (p_c), s      |                                                                                   | 0.2                                                                               | 0.0                                                                               | 5.0                                                                               |                                                                                                                                                                     |                                                                                   |   | 5.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                                                                      |  |  |  |  |  |  |   |      |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                                                             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations                                                  |  |                                                                                   |  |  |  |                                                                                   |   |      |
| Traffic Volume (veh/h)                                               | 12                                                                                | 3                                                                                 | 2                                                                                 | 300                                                                               | 291                                                                               | 35                                                                                |   |      |
| Future Volume (veh/h)                                                | 12                                                                                | 3                                                                                 | 2                                                                                 | 300                                                                               | 291                                                                               | 35                                                                                |   |      |
| Number                                                               | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln                                               | 950                                                                               | 1900                                                                              | 950                                                                               | 1810                                                                              | 1650                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h                                                 | 14                                                                                | 4                                                                                 | 2                                                                                 | 353                                                                               | 342                                                                               | 41                                                                                |   |      |
| Adj No. of Lanes                                                     | 0                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor                                                     | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |      |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 100                                                                               | 5                                                                                 | 5                                                                                 | 5                                                                                 |   |      |
| Cap, veh/h                                                           | 12                                                                                | 4                                                                                 | 540                                                                               | 1429                                                                              | 1142                                                                              | 137                                                                               |   |      |
| Arrive On Green                                                      | 0.02                                                                              | 0.02                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              |   |      |
| Sat Flow, veh/h                                                      | 652                                                                               | 186                                                                               | 508                                                                               | 1810                                                                              | 1446                                                                              | 173                                                                               |   |      |
| Grp Volume(v), veh/h                                                 | 19                                                                                | 0                                                                                 | 2                                                                                 | 353                                                                               | 0                                                                                 | 383                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln                                             | 885                                                                               | 0                                                                                 | 508                                                                               | 1810                                                                              | 0                                                                                 | 1619                                                                              |   |      |
| Q Serve(g_s), s                                                      | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 2.1                                                                               | 0.0                                                                               | 2.7                                                                               |   |      |
| Cycle Q Clear(g_c), s                                                | 0.8                                                                               | 0.0                                                                               | 2.8                                                                               | 2.1                                                                               | 0.0                                                                               | 2.7                                                                               |   |      |
| Prop In Lane                                                         | 0.74                                                                              | 0.21                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.11                                                                              |   |      |
| Lane Grp Cap(c), veh/h                                               | 17                                                                                | 0                                                                                 | 540                                                                               | 1429                                                                              | 0                                                                                 | 1279                                                                              |   |      |
| V/C Ratio(X)                                                         | 1.13                                                                              | 0.00                                                                              | 0.00                                                                              | 0.25                                                                              | 0.00                                                                              | 0.30                                                                              |   |      |
| Avail Cap(c_a), veh/h                                                | 402                                                                               | 0                                                                                 | 540                                                                               | 1429                                                                              | 0                                                                                 | 1279                                                                              |   |      |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh                                             | 20.5                                                                              | 0.0                                                                               | 1.6                                                                               | 1.1                                                                               | 0.0                                                                               | 1.2                                                                               |   |      |
| Incr Delay (d2), s/veh                                               | 143.0                                                                             | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               |   |      |
| Initial Q Delay(d3),s/veh                                            | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln                                             | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 1.1                                                                               | 0.0                                                                               | 1.4                                                                               |   |      |
| LnGrp Delay(d),s/veh                                                 | 172.0                                                                             | 0.0                                                                               | 1.6                                                                               | 1.6                                                                               | 0.0                                                                               | 1.8                                                                               |   |      |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |   |      |
| Approach Vol, veh/h                                                  | 19                                                                                |                                                                                   |                                                                                   | 355                                                                               | 383                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh                                                | 172.0                                                                             |                                                                                   |                                                                                   | 1.6                                                                               | 1.8                                                                               |                                                                                   |   |      |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |      |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 4.8                                                                               |                                                                                   | 37.0                                                                              |                                                                                   |                                                                                   |   | 37.0 |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s                                          |                                                                                   | 19.0                                                                              |                                                                                   | 33.0                                                                              |                                                                                   |                                                                                   |   | 33.0 |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 2.8                                                                               |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   |   | 4.8  |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               |                                                                                   | 5.1                                                                               |                                                                                   |                                                                                   |   | 5.1  |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 6.0                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
5: Pacific Avenue & Metro Station Access

**APPENDIX F**  
Existing + Project  
AM Peak

| Intersection             |                                                                                   |          |                                                                                   |      |        |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.6                                                                               |          |                                                                                   |      |        |                                                                                     |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL    | SBT                                                                                 |
| Lane Configurations      |  |          |  |      |        |  |
| Traffic Vol, veh/h       | 12                                                                                | 10       | 107                                                                               | 4    | 10     | 43                                                                                  |
| Future Vol, veh/h        | 12                                                                                | 10       | 107                                                                               | 4    | 10     | 43                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0      | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free   | Free                                                                                |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -      | None                                                                                |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -      | -                                                                                   |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Peak Hour Factor         | 81                                                                                | 81       | 81                                                                                | 81   | 81     | 81                                                                                  |
| Heavy Vehicles, %        | 12                                                                                | 10       | 13                                                                                | 100  | 100    | 8                                                                                   |
| Mvmt Flow                | 15                                                                                | 12       | 132                                                                               | 5    | 12     | 53                                                                                  |
| Major/Minor              | Minor1                                                                            |          | Major1                                                                            |      | Major2 |                                                                                     |
| Conflicting Flow All     | 213                                                                               | 135      | 0                                                                                 | 0    | 137    | 0                                                                                   |
| Stage 1                  | 135                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 78                                                                                | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy            | 6.52                                                                              | 6.3      | -                                                                                 | -    | 5.1    | -                                                                                   |
| Critical Hdwy Stg 1      | 5.52                                                                              | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy Stg 2      | 5.52                                                                              | -        | -                                                                                 | -    | -      | -                                                                                   |
| Follow-up Hdwy           | 3.608                                                                             | 3.39     | -                                                                                 | -    | 3.1    | -                                                                                   |
| Pot Cap-1 Maneuver       | 753                                                                               | 893      | -                                                                                 | -    | 1014   | -                                                                                   |
| Stage 1                  | 867                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 920                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |        | -                                                                                   |
| Mov Cap-1 Maneuver       | 744                                                                               | 893      | -                                                                                 | -    | 1014   | -                                                                                   |
| Mov Cap-2 Maneuver       | 744                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 1                  | 867                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 909                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Approach                 | WB                                                                                |          | NB                                                                                |      | SB     |                                                                                     |
| HCM Control Delay, s     | 9.6                                                                               |          | 0                                                                                 |      | 1.6    |                                                                                     |
| HCM LOS                  | A                                                                                 |          |                                                                                   |      |        |                                                                                     |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |        |                                                                                     |
| Capacity (veh/h)         | -                                                                                 | - 805    | 1014                                                                              | -    |        |                                                                                     |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.034  | 0.012                                                                             | -    |        |                                                                                     |
| HCM Control Delay (s)    | -                                                                                 | - 9.6    | 8.6                                                                               | 0    |        |                                                                                     |
| HCM Lane LOS             | -                                                                                 | - A      | A                                                                                 | A    |        |                                                                                     |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |        |                                                                                     |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.7 |
| Intersection LOS          | A   |

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 11   | 2    | 21   | 0    | 3    | 1    | 4    | 0    | 9    | 101  | 2    |
| Future Vol, veh/h   | 0    | 11   | 2    | 21   | 0    | 3    | 1    | 4    | 0    | 9    | 101  | 2    |
| Peak Hour Factor    | 0.92 | 0.80 | 0.80 | 0.80 | 0.92 | 0.80 | 0.80 | 0.80 | 0.92 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, %   | 2    | 9    | 50   | 14   | 2    | 33   | 0    | 0    | 2    | 0    | 16   | 0    |
| Mvmt Flow           | 0    | 14   | 3    | 26   | 0    | 4    | 1    | 5    | 0    | 11   | 126  | 3    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 7.4 | 7.8 | 7.9 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 8%    | 32%   | 38%   | 5%    |
| Vol Thru, %            | 90%   | 6%    | 12%   | 78%   |
| Vol Right, %           | 2%    | 62%   | 50%   | 17%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 112   | 34    | 8     | 58    |
| LT Vol                 | 9     | 11    | 3     | 3     |
| Through Vol            | 101   | 2     | 1     | 45    |
| RT Vol                 | 2     | 21    | 4     | 10    |
| Lane Flow Rate         | 140   | 42    | 10    | 72    |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.158 | 0.049 | 0.013 | 0.081 |
| Departure Headway (Hd) | 4.052 | 4.118 | 4.744 | 4.004 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 881   | 854   | 759   | 887   |
| Service Time           | 2.096 | 2.218 | 2.744 | 2.064 |
| HCM Lane V/C Ratio     | 0.159 | 0.049 | 0.013 | 0.081 |
| HCM Control Delay      | 7.9   | 7.4   | 7.8   | 7.4   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.6   | 0.2   | 0     | 0.3   |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement            | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 3    | 45   | 10   |
| Future Vol, veh/h   | 0    | 3    | 45   | 10   |
| Peak Hour Factor    | 0.92 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, %   | 2    | 0    | 41   | 10   |
| Mvmt Flow           | 0    | 4    | 56   | 13   |
| Number of Lanes     | 0    | 0    | 1    | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.4 |
| HCM LOS                    | A   |

# APPENDIX F

Santa Cruz DRP Study

Existing + Project

7: Pacific Street & Front Street & Mission Street/Water Street

AM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | SBL2                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 81                                                                                | 380                                                                               | 75                                                                                | 19                                                                                | 61                                                                                | 48                                                                                | 637                                                                                | 3                                                                                   | 5                                                                                   | 60                                                                                  | 18                                                                                  | 107                                                                                 |
| Future Volume (vph)               | 81                                                                                | 380                                                                               | 75                                                                                | 19                                                                                | 61                                                                                | 48                                                                                | 637                                                                                | 3                                                                                   | 5                                                                                   | 60                                                                                  | 18                                                                                  | 107                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1736                                                                              | 3471                                                                              | 1524                                                                              |                                                                                   | 1597                                                                              | 1770                                                                              | 3537                                                                               |                                                                                     |                                                                                     |                                                                                     | 1608                                                                                | 1599                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1736                                                                              | 3471                                                                              | 1524                                                                              |                                                                                   | 1597                                                                              | 1770                                                                              | 3537                                                                               |                                                                                     |                                                                                     |                                                                                     | 1608                                                                                | 1599                                                                                |
| Peak-hour factor, PHF             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Adj. Flow (vph)                   | 91                                                                                | 427                                                                               | 84                                                                                | 21                                                                                | 69                                                                                | 54                                                                                | 716                                                                                | 3                                                                                   | 6                                                                                   | 67                                                                                  | 20                                                                                  | 120                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 88                                                                                  |
| Lane Group Flow (vph)             | 91                                                                                | 427                                                                               | 74                                                                                | 0                                                                                 | 69                                                                                | 54                                                                                | 718                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 93                                                                                  | 32                                                                                  |
| Heavy Vehicles (%)                | 4%                                                                                | 4%                                                                                | 5%                                                                                | 10%                                                                               | 13%                                                                               | 2%                                                                                | 2%                                                                                 | 0%                                                                                  | 0%                                                                                  | 19%                                                                                 | 0%                                                                                  | 1%                                                                                  |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 |                                                                                     | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 5                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Actuated Green, G (s)             | 8.2                                                                               | 40.9                                                                              | 40.9                                                                              |                                                                                   | 7.6                                                                               | 7.6                                                                               | 40.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 22.1                                                                                | 22.1                                                                                |
| Effective Green, g (s)            | 8.2                                                                               | 40.9                                                                              | 40.9                                                                              |                                                                                   | 7.6                                                                               | 7.6                                                                               | 40.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 22.1                                                                                | 22.1                                                                                |
| Actuated g/C Ratio                | 0.10                                                                              | 0.50                                                                              | 0.50                                                                              |                                                                                   | 0.09                                                                              | 0.09                                                                              | 0.49                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.27                                                                                | 0.27                                                                                |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 172                                                                               | 1718                                                                              | 754                                                                               |                                                                                   | 146                                                                               | 162                                                                               | 1725                                                                               |                                                                                     |                                                                                     |                                                                                     | 430                                                                                 | 427                                                                                 |
| v/s Ratio Prot                    | c0.05                                                                             | 0.12                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.03                                                                              | c0.20                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.06                                                                                | 0.02                                                                                |
| v/c Ratio                         | 0.53                                                                              | 0.25                                                                              | 0.10                                                                              |                                                                                   | 0.47                                                                              | 0.33                                                                              | 0.42                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.22                                                                                | 0.08                                                                                |
| Uniform Delay, d1                 | 35.4                                                                              | 12.0                                                                              | 11.1                                                                              |                                                                                   | 35.6                                                                              | 35.1                                                                              | 13.6                                                                               |                                                                                     |                                                                                     |                                                                                     | 23.5                                                                                | 22.6                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 2.9                                                                               | 0.1                                                                               | 0.1                                                                               |                                                                                   | 2.4                                                                               | 1.2                                                                               | 0.7                                                                                |                                                                                     |                                                                                     |                                                                                     | 1.2                                                                                 | 0.3                                                                                 |
| Delay (s)                         | 38.3                                                                              | 12.1                                                                              | 11.1                                                                              |                                                                                   | 38.0                                                                              | 36.3                                                                              | 14.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 24.7                                                                                | 23.0                                                                                |
| Level of Service                  | D                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | B                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 17.7                                                                               |                                                                                     |                                                                                     |                                                                                     | 23.7                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                          |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.37                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 82.6                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 36.7%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                               |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |                                                                                   |  |                                                                                   |  |  |  |                                                                                   |  |                                                                                    |  |  |                                                                                     |
| Traffic Volume (veh/h)                                               | 29                                                                                | 52                                                                                | 10                                                                                | 223                                                                               | 104                                                                               | 42                                                                                | 10                                                                                | 229                                                                               | 146                                                                                | 24                                                                                  | 172                                                                                 | 22                                                                                  |
| Future Volume (veh/h)                                                | 29                                                                                | 52                                                                                | 10                                                                                | 223                                                                               | 104                                                                               | 42                                                                                | 10                                                                                | 229                                                                               | 146                                                                                | 24                                                                                  | 172                                                                                 | 22                                                                                  |
| Number                                                               | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                 | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1900                                                                              | 1841                                                                              | 1900                                                                              | 1792                                                                              | 1825                                                                              | 1827                                                                              | 1900                                                                              | 1714                                                                              | 1900                                                                               | 1638                                                                                | 1606                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                 | 34                                                                                | 60                                                                                | 12                                                                                | 190                                                                               | 218                                                                               | 0                                                                                 | 12                                                                                | 266                                                                               | 170                                                                                | 28                                                                                  | 200                                                                                 | 26                                                                                  |
| Adj No. of Lanes                                                     | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                               | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 6                                                                                 | 3                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                 | 8                                                                                  | 16                                                                                  | 19                                                                                  | 19                                                                                  |
| Cap, veh/h                                                           | 62                                                                                | 116                                                                               | 24                                                                                | 855                                                                               | 914                                                                               | 778                                                                               | 65                                                                                | 489                                                                               | 296                                                                                | 218                                                                                 | 362                                                                                 | 47                                                                                  |
| Arrive On Green                                                      | 0.06                                                                              | 0.06                                                                              | 0.06                                                                              | 0.50                                                                              | 0.50                                                                              | 0.00                                                                              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                               | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                |
| Sat Flow, veh/h                                                      | 1093                                                                              | 2040                                                                              | 420                                                                               | 1707                                                                              | 1825                                                                              | 1553                                                                              | 30                                                                                | 1883                                                                              | 1141                                                                               | 834                                                                                 | 1393                                                                                | 181                                                                                 |
| Grp Volume(v), veh/h                                                 | 56                                                                                | 0                                                                                 | 50                                                                                | 190                                                                               | 218                                                                               | 0                                                                                 | 246                                                                               | 0                                                                                 | 202                                                                                | 28                                                                                  | 0                                                                                   | 226                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             | 1786                                                                              | 0                                                                                 | 1767                                                                              | 1707                                                                              | 1825                                                                              | 1553                                                                              | 1696                                                                              | 0                                                                                 | 1359                                                                               | 834                                                                                 | 0                                                                                   | 1574                                                                                |
| Q Serve(g_s), s                                                      | 2.0                                                                               | 0.0                                                                               | 1.8                                                                               | 4.1                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 8.5                                                                                | 2.0                                                                                 | 0.0                                                                                 | 8.2                                                                                 |
| Cycle Q Clear(g_c), s                                                | 2.0                                                                               | 0.0                                                                               | 1.8                                                                               | 4.1                                                                               | 4.5                                                                               | 0.0                                                                               | 8.1                                                                               | 0.0                                                                               | 8.5                                                                                | 10.5                                                                                | 0.0                                                                                 | 8.2                                                                                 |
| Prop In Lane                                                         | 0.61                                                                              |                                                                                   | 0.24                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.05                                                                              |                                                                                   | 0.84                                                                               | 1.00                                                                                |                                                                                     | 0.12                                                                                |
| Lane Grp Cap(c), veh/h                                               | 102                                                                               | 0                                                                                 | 101                                                                               | 855                                                                               | 914                                                                               | 778                                                                               | 498                                                                               | 0                                                                                 | 353                                                                                | 218                                                                                 | 0                                                                                   | 409                                                                                 |
| V/C Ratio(X)                                                         | 0.55                                                                              | 0.00                                                                              | 0.50                                                                              | 0.22                                                                              | 0.24                                                                              | 0.00                                                                              | 0.49                                                                              | 0.00                                                                              | 0.57                                                                               | 0.13                                                                                | 0.00                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h                                                | 515                                                                               | 0                                                                                 | 510                                                                               | 855                                                                               | 914                                                                               | 778                                                                               | 975                                                                               | 0                                                                                 | 743                                                                                | 457                                                                                 | 0                                                                                   | 860                                                                                 |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 30.2                                                                              | 0.0                                                                               | 30.2                                                                              | 9.2                                                                               | 9.3                                                                               | 0.0                                                                               | 21.1                                                                              | 0.0                                                                               | 21.2                                                                               | 25.8                                                                                | 0.0                                                                                 | 21.1                                                                                |
| Incr Delay (d2), s/veh                                               | 4.5                                                                               | 0.0                                                                               | 3.8                                                                               | 0.6                                                                               | 0.6                                                                               | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               | 1.5                                                                                | 0.3                                                                                 | 0.0                                                                                 | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 1.1                                                                               | 0.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.4                                                                               | 0.0                                                                               | 3.9                                                                               | 0.0                                                                               | 3.4                                                                                | 0.5                                                                                 | 0.0                                                                                 | 3.6                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 34.7                                                                              | 0.0                                                                               | 34.0                                                                              | 9.8                                                                               | 9.9                                                                               | 0.0                                                                               | 21.8                                                                              | 0.0                                                                               | 22.7                                                                               | 26.0                                                                                | 0.0                                                                                 | 22.2                                                                                |
| LnGrp LOS                                                            | C                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                  | C                                                                                   |                                                                                     | C                                                                                   |
| Approach Vol, veh/h                                                  | 106                                                                               |                                                                                   |                                                                                   |                                                                                   | 408                                                                               |                                                                                   | 448                                                                               |                                                                                   |                                                                                    |                                                                                     | 254                                                                                 |                                                                                     |
| Approach Delay, s/veh                                                | 34.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   | 22.2                                                                              |                                                                                   |                                                                                    |                                                                                     | 22.7                                                                                |                                                                                     |
| Approach LOS                                                         | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             | 7.8                                                                               |                                                                                   | 21.1                                                                              |                                                                                   | 37.0                                                                              |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          | 19.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                   | 33.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         | 4.0                                                                               |                                                                                   | 12.5                                                                              |                                                                                   | 6.5                                                                               |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              | 0.4                                                                               |                                                                                   | 4.6                                                                               |                                                                                   | 1.8                                                                               |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 19.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

**Intersection**

Intersection Delay, s/veh 8.1

Intersection LOS A

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |      |      |      |      |
| Traffic Vol, veh/h  | 0    | 6    | 21   | 13   | 0    | 36   | 38   | 20   | 0    | 7    | 71   | 23   | 0    | 0    | 0    | 0    |
| Future Vol, veh/h   | 0    | 6    | 21   | 13   | 0    | 36   | 38   | 20   | 0    | 7    | 71   | 23   | 0    | 0    | 0    | 0    |
| Peak Hour Factor    | 0.92 | 0.81 | 0.81 | 0.81 | 0.92 | 0.81 | 0.81 | 0.81 | 0.92 | 0.81 | 0.81 | 0.81 | 0.92 | 0.81 | 0.81 | 0.81 |
| Heavy Vehicles, %   | 2    | 16   | 9    | 15   | 2    | 28   | 2    | 25   | 2    | 0    | 4    | 28   | 2    | 0    | 0    | 0    |
| Mvmt Flow           | 0    | 7    | 26   | 16   | 0    | 44   | 47   | 25   | 0    | 9    | 88   | 28   | 0    | 0    | 0    | 0    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  |     |
| Opposing Lanes             | 1   | 1   | 0   |
| Conflicting Approach Left  |     | NB  | EB  |
| Conflicting Lanes Left     | 0   | 1   | 1   |
| Conflicting Approach Right | NB  |     | WB  |
| Conflicting Lanes Right    | 1   | 0   | 1   |
| HCM Control Delay          | 7.7 | 8.5 | 7.9 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, %            | 7%    | 15%   | 38%   |
| Vol Thru, %            | 70%   | 53%   | 40%   |
| Vol Right, %           | 23%   | 33%   | 21%   |
| Sign Control           | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 101   | 40    | 94    |
| LT Vol                 | 7     | 6     | 36    |
| Through Vol            | 71    | 21    | 38    |
| RT Vol                 | 23    | 13    | 20    |
| Lane Flow Rate         | 125   | 49    | 116   |
| Geometry Grp           | 1     | 1     | 1     |
| Degree of Util (X)     | 0.145 | 0.061 | 0.148 |
| Departure Headway (Hd) | 4.175 | 4.418 | 4.584 |
| Convergence, Y/N       | Yes   | Yes   | Yes   |
| Cap                    | 863   | 814   | 773   |
| Service Time           | 2.179 | 2.426 | 2.667 |
| HCM Lane V/C Ratio     | 0.145 | 0.06  | 0.15  |
| HCM Control Delay      | 7.9   | 7.7   | 8.5   |
| HCM Lane LOS           | A     | A     | A     |
| HCM 95th-tile Q        | 0.5   | 0.2   | 0.5   |

| Intersection             |        |                                                                                   |                                                                                   |      |      |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|
| Int Delay, s/veh         | 3.6    |                                                                                   |                                                                                   |      |      |      |
| Movement                 | WBL    | WBR                                                                               | NBT                                                                               | NBR  | SBL  | SBT  |
| Lane Configurations      |        |  |  |      |      |      |
| Traffic Vol, veh/h       | 0      | 103                                                                               | 75                                                                                | 98   | 0    | 0    |
| Future Vol, veh/h        | 0      | 103                                                                               | 75                                                                                | 98   | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free | Free | Free |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -    | None |
| Storage Length           | -      | 0                                                                                 | -                                                                                 | -    | -    | -    |
| Veh in Median Storage, # | 0      | -                                                                                 | 0                                                                                 | -    | -    | -    |
| Grade, %                 | 0      | -                                                                                 | 0                                                                                 | -    | -    | 0    |
| Peak Hour Factor         | 84     | 84                                                                                | 84                                                                                | 84   | 84   | 84   |
| Heavy Vehicles, %        | 0      | 4                                                                                 | 6                                                                                 | 5    | 0    | 0    |
| Mvmt Flow                | 0      | 123                                                                               | 89                                                                                | 117  | 0    | 0    |
| Major/Minor              | Minor1 | Major1                                                                            |                                                                                   |      |      |      |
| Conflicting Flow All     | -      | 148                                                                               | 0                                                                                 | 0    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy            | -      | 6.24                                                                              | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Follow-up Hdwy           | -      | 3.336                                                                             | -                                                                                 | -    |      |      |
| Pot Cap-1 Maneuver       | 0      | 894                                                                               | -                                                                                 | -    |      |      |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Platoon blocked, %       |        |                                                                                   | -                                                                                 | -    |      |      |
| Mov Cap-1 Maneuver       | -      | 894                                                                               | -                                                                                 | -    |      |      |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Approach                 | WB     | NB                                                                                |                                                                                   |      |      |      |
| HCM Control Delay, s     | 9.7    | 0                                                                                 |                                                                                   |      |      |      |
| HCM LOS                  | A      |                                                                                   |                                                                                   |      |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBRWBLn1                                                                          |                                                                                   |      |      |      |
| Capacity (veh/h)         | -      | - 894                                                                             |                                                                                   |      |      |      |
| HCM Lane V/C Ratio       | -      | - 0.137                                                                           |                                                                                   |      |      |      |
| HCM Control Delay (s)    | -      | - 9.7                                                                             |                                                                                   |      |      |      |
| HCM Lane LOS             | -      | - A                                                                               |                                                                                   |      |      |      |
| HCM 95th %tile Q(veh)    | -      | - 0.5                                                                             |                                                                                   |      |      |      |

Santa Cruz DRP Study  
11: Ocean Street & Water Street

APPENDIX F

Existing + Project

AM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 167                                                                               | 303                                                                               | 49                                                                                | 136                                                                               | 459                                                                               | 255                                                                               | 78                                                                                | 466                                                                                 | 40                                                                                  | 175                                                                                 | 620                                                                                 | 391                                                                                 |
| Future Volume (veh/h)        | 167                                                                               | 303                                                                               | 49                                                                                | 136                                                                               | 459                                                                               | 255                                                                               | 78                                                                                | 466                                                                                 | 40                                                                                  | 175                                                                                 | 620                                                                                 | 391                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1827                                                                              | 1822                                                                              | 1900                                                                              | 1881                                                                              | 1827                                                                              | 1863                                                                              | 1845                                                                              | 1845                                                                                | 1900                                                                                | 1863                                                                                | 1845                                                                                | 1845                                                                                |
| Adj Flow Rate, veh/h         | 180                                                                               | 326                                                                               | 53                                                                                | 146                                                                               | 494                                                                               | 0                                                                                 | 84                                                                                | 501                                                                                 | 43                                                                                  | 188                                                                                 | 667                                                                                 | 0                                                                                   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 4                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                 | 4                                                                                 | 2                                                                                 | 3                                                                                 | 3                                                                                   | 0                                                                                   | 2                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 284                                                                               | 682                                                                               | 110                                                                               | 191                                                                               | 871                                                                               | 397                                                                               | 109                                                                               | 984                                                                                 | 454                                                                                 | 241                                                                                 | 1242                                                                                | 556                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.23                                                                              | 0.23                                                                              | 0.11                                                                              | 0.25                                                                              | 0.00                                                                              | 0.06                                                                              | 0.28                                                                                | 0.28                                                                                | 0.14                                                                                | 0.35                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3375                                                                              | 2987                                                                              | 481                                                                               | 1792                                                                              | 3471                                                                              | 1583                                                                              | 1757                                                                              | 3505                                                                                | 1615                                                                                | 1774                                                                                | 3505                                                                                | 1568                                                                                |
| Grp Volume(v), veh/h         | 180                                                                               | 187                                                                               | 192                                                                               | 146                                                                               | 494                                                                               | 0                                                                                 | 84                                                                                | 501                                                                                 | 43                                                                                  | 188                                                                                 | 667                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1688                                                                              | 1731                                                                              | 1737                                                                              | 1792                                                                              | 1736                                                                              | 1583                                                                              | 1757                                                                              | 1752                                                                                | 1615                                                                                | 1774                                                                                | 1752                                                                                | 1568                                                                                |
| Q Serve(g_s), s              | 3.3                                                                               | 6.0                                                                               | 6.2                                                                               | 5.1                                                                               | 8.0                                                                               | 0.0                                                                               | 3.0                                                                               | 7.7                                                                                 | 1.3                                                                                 | 6.6                                                                                 | 9.8                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 3.3                                                                               | 6.0                                                                               | 6.2                                                                               | 5.1                                                                               | 8.0                                                                               | 0.0                                                                               | 3.0                                                                               | 7.7                                                                                 | 1.3                                                                                 | 6.6                                                                                 | 9.8                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.28                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 284                                                                               | 395                                                                               | 397                                                                               | 191                                                                               | 871                                                                               | 397                                                                               | 109                                                                               | 984                                                                                 | 454                                                                                 | 241                                                                                 | 1242                                                                                | 556                                                                                 |
| V/C Ratio(X)                 | 0.63                                                                              | 0.47                                                                              | 0.48                                                                              | 0.76                                                                              | 0.57                                                                              | 0.00                                                                              | 0.77                                                                              | 0.51                                                                                | 0.09                                                                                | 0.78                                                                                | 0.54                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 681                                                                               | 725                                                                               | 728                                                                               | 612                                                                               | 1940                                                                              | 885                                                                               | 382                                                                               | 1632                                                                                | 752                                                                                 | 688                                                                                 | 2230                                                                                | 998                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.5                                                                              | 21.5                                                                              | 21.6                                                                              | 28.0                                                                              | 21.1                                                                              | 0.0                                                                               | 29.8                                                                              | 19.4                                                                                | 17.1                                                                                | 26.9                                                                                | 16.6                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.3                                                                               | 0.9                                                                               | 0.9                                                                               | 6.2                                                                               | 0.6                                                                               | 0.0                                                                               | 10.9                                                                              | 0.4                                                                                 | 0.1                                                                                 | 5.5                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 3.0                                                                               | 3.0                                                                               | 2.8                                                                               | 3.9                                                                               | 0.0                                                                               | 1.8                                                                               | 3.7                                                                                 | 0.6                                                                                 | 3.6                                                                                 | 4.8                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 30.9                                                                              | 22.4                                                                              | 22.5                                                                              | 34.2                                                                              | 21.7                                                                              | 0.0                                                                               | 40.6                                                                              | 19.8                                                                                | 17.2                                                                                | 32.4                                                                                | 16.9                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 559                                                                               |                                                                                   |                                                                                   |                                                                                   | 640                                                                               |                                                                                   |                                                                                   |                                                                                     | 628                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   |                                                                                     | 22.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.9                                                                              | 18.7                                                                              | 8.0                                                                               | 26.8                                                                              | 9.4                                                                               | 20.2                                                                              | 12.7                                                                              | 22.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 22.0                                                                              | 27.0                                                                              | 14.0                                                                              | 41.0                                                                              | 13.0                                                                              | 36.0                                                                              | 25.0                                                                              | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.1                                                                               | 8.2                                                                               | 5.0                                                                               | 11.8                                                                              | 5.3                                                                               | 10.0                                                                              | 8.6                                                                               | 9.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 5.5                                                                               | 0.1                                                                               | 9.7                                                                               | 0.3                                                                               | 6.2                                                                               | 0.4                                                                               | 8.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

**APPENDIX F**  
Existing + Project  
AM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 213                                                                               | 1529                                                                              | 49                                                                                | 278                                                                               | 1394                                                                              | 515                                                                               | 27                                                                                | 166                                                                               | 203                                                                               | 412                                                                                 | 161                                                                                 | 185                                                                                 |
| Future Volume (veh/h)        | 213                                                                               | 1529                                                                              | 49                                                                                | 278                                                                               | 1394                                                                              | 515                                                                               | 27                                                                                | 166                                                                               | 203                                                                               | 412                                                                                 | 161                                                                                 | 185                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1845                                                                              | 1845                                                                              | 1900                                                                              | 1827                                                                              | 1827                                                                              | 1792                                                                              | 1712                                                                              | 1810                                                                              | 1810                                                                              | 1610                                                                                | 1727                                                                                | 1743                                                                                |
| Adj Flow Rate, veh/h         | 220                                                                               | 1576                                                                              | 0                                                                                 | 287                                                                               | 1437                                                                              | 0                                                                                 | 28                                                                                | 171                                                                               | 209                                                                               | 425                                                                                 | 166                                                                                 | 191                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 4                                                                                 | 4                                                                                 | 6                                                                                 | 11                                                                                | 5                                                                                 | 5                                                                                 | 18                                                                                  | 10                                                                                  | 9                                                                                   |
| Cap, veh/h                   | 239                                                                               | 2339                                                                              | 0                                                                                 | 328                                                                               | 2120                                                                              | 648                                                                               | 252                                                                               | 280                                                                               | 419                                                                               | 599                                                                                 | 348                                                                                 | 298                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.46                                                                              | 0.00                                                                              | 0.10                                                                              | 0.43                                                                              | 0.00                                                                              | 0.15                                                                              | 0.15                                                                              | 0.15                                                                              | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1757                                                                              | 5204                                                                              | 0                                                                                 | 3375                                                                              | 4988                                                                              | 1524                                                                              | 1630                                                                              | 1810                                                                              | 2707                                                                              | 2975                                                                                | 1727                                                                                | 1482                                                                                |
| Grp Volume(v), veh/h         | 220                                                                               | 1576                                                                              | 0                                                                                 | 287                                                                               | 1437                                                                              | 0                                                                                 | 28                                                                                | 171                                                                               | 209                                                                               | 425                                                                                 | 166                                                                                 | 191                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1757                                                                              | 1679                                                                              | 0                                                                                 | 1688                                                                              | 1663                                                                              | 1524                                                                              | 1630                                                                              | 1810                                                                              | 1354                                                                              | 1487                                                                                | 1727                                                                                | 1482                                                                                |
| Q Serve(g_s), s              | 24.0                                                                              | 47.3                                                                              | 0.0                                                                               | 16.3                                                                              | 45.1                                                                              | 0.0                                                                               | 2.9                                                                               | 17.1                                                                              | 13.7                                                                              | 25.8                                                                                | 16.5                                                                                | 22.9                                                                                |
| Cycle Q Clear(g_c), s        | 24.0                                                                              | 47.3                                                                              | 0.0                                                                               | 16.3                                                                              | 45.1                                                                              | 0.0                                                                               | 2.9                                                                               | 17.1                                                                              | 13.7                                                                              | 25.8                                                                                | 16.5                                                                                | 22.9                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 239                                                                               | 2339                                                                              | 0                                                                                 | 328                                                                               | 2120                                                                              | 648                                                                               | 252                                                                               | 280                                                                               | 419                                                                               | 599                                                                                 | 348                                                                                 | 298                                                                                 |
| V/C Ratio(X)                 | 0.92                                                                              | 0.67                                                                              | 0.00                                                                              | 0.88                                                                              | 0.68                                                                              | 0.00                                                                              | 0.11                                                                              | 0.61                                                                              | 0.50                                                                              | 0.71                                                                                | 0.48                                                                                | 0.64                                                                                |
| Avail Cap(c_a), veh/h        | 335                                                                               | 2339                                                                              | 0                                                                                 | 435                                                                               | 2120                                                                              | 648                                                                               | 252                                                                               | 280                                                                               | 419                                                                               | 599                                                                                 | 348                                                                                 | 298                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 82.6                                                                              | 40.5                                                                              | 0.0                                                                               | 86.3                                                                              | 45.0                                                                              | 0.0                                                                               | 70.4                                                                              | 76.5                                                                              | 75.0                                                                              | 72.1                                                                                | 68.4                                                                                | 71.0                                                                                |
| Incr Delay (d2), s/veh       | 23.7                                                                              | 1.6                                                                               | 0.0                                                                               | 14.3                                                                              | 1.8                                                                               | 0.0                                                                               | 0.9                                                                               | 9.6                                                                               | 4.2                                                                               | 7.0                                                                                 | 4.6                                                                                 | 10.1                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 18.3                                                                              | 22.2                                                                              | 0.0                                                                               | 8.3                                                                               | 21.1                                                                              | 0.0                                                                               | 1.4                                                                               | 9.3                                                                               | 5.4                                                                               | 11.2                                                                                | 8.3                                                                                 | 10.2                                                                                |
| LnGrp Delay(d),s/veh         | 106.4                                                                             | 42.0                                                                              | 0.0                                                                               | 100.7                                                                             | 46.8                                                                              | 0.0                                                                               | 71.3                                                                              | 86.0                                                                              | 79.2                                                                              | 79.1                                                                                | 73.1                                                                                | 81.1                                                                                |
| LnGrp LOS                    | F                                                                                 | D                                                                                 |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                 | E                                                                                   | E                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 1796                                                                              |                                                                                   |                                                                                   | 1724                                                                              |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                   | 782                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 49.9                                                                              |                                                                                   |                                                                                   | 55.7                                                                              |                                                                                   |                                                                                   | 81.5                                                                              |                                                                                   |                                                                                   | 78.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.8                                                                              | 94.0                                                                              |                                                                                   | 34.0                                                                              | 30.4                                                                              | 86.4                                                                              |                                                                                   | 43.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.0                                                                              | 90.0                                                                              |                                                                                   | 30.0                                                                              | 37.0                                                                              | 78.0                                                                              |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+Tb), s | 119.3                                                                             | 49.3                                                                              |                                                                                   | 19.1                                                                              | 26.0                                                                              | 47.1                                                                              |                                                                                   | 27.8                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.6                                                                               | 33.8                                                                              |                                                                                   | 1.4                                                                               | 0.5                                                                               | 26.7                                                                              |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 59.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                      |  |  |  |  |  |  |  |  |  |    |  |  |
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)                                               | 1428                                                                              | 392                                                                               | 51                                                                                | 7                                                                                 | 367                                                                               | 27                                                                                | 95                                                                                | 294                                                                               | 24                                                                                | 58                                                                                  | 209                                                                                 | 1471                                                                                |
| Future Volume (veh/h)                                                | 1428                                                                              | 392                                                                               | 51                                                                                | 7                                                                                 | 367                                                                               | 27                                                                                | 95                                                                                | 294                                                                               | 24                                                                                | 58                                                                                  | 209                                                                                 | 1471                                                                                |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1845                                                                              | 1839                                                                              | 1900                                                                              | 1900                                                                              | 1849                                                                              | 1900                                                                              | 1881                                                                              | 1883                                                                              | 1900                                                                              | 1881                                                                                | 1845                                                                                | 1827                                                                                |
| Adj Flow Rate, veh/h                                                 | 1587                                                                              | 436                                                                               | 57                                                                                | 8                                                                                 | 408                                                                               | 0                                                                                 | 106                                                                               | 327                                                                               | 27                                                                                | 64                                                                                  | 232                                                                                 | 1634                                                                                |
| Adj No. of Lanes                                                     | 2                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 2                                                                                   |
| Peak Hour Factor                                                     | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %                                                 | 3                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 3                                                                                   | 4                                                                                   |
| Cap, veh/h                                                           | 1209                                                                              | 548                                                                               | 72                                                                                | 10                                                                                | 518                                                                               | 0                                                                                 | 138                                                                               | 1075                                                                              | 88                                                                                | 84                                                                                  | 1020                                                                                | 1196                                                                                |
| Arrive On Green                                                      | 0.34                                                                              | 0.34                                                                              | 0.34                                                                              | 0.15                                                                              | 0.15                                                                              | 0.00                                                                              | 0.08                                                                              | 0.32                                                                              | 0.32                                                                              | 0.05                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h                                                      | 3514                                                                              | 1594                                                                              | 208                                                                               | 66                                                                                | 3629                                                                              | 0                                                                                 | 1792                                                                              | 3348                                                                              | 275                                                                               | 1792                                                                                | 3505                                                                                | 2733                                                                                |
| Grp Volume(v), veh/h                                                 | 1587                                                                              | 0                                                                                 | 493                                                                               | 223                                                                               | 193                                                                               | 0                                                                                 | 106                                                                               | 174                                                                               | 180                                                                               | 64                                                                                  | 232                                                                                 | 1634                                                                                |
| Grp Sat Flow(s),veh/h/ln                                             | 1757                                                                              | 0                                                                                 | 1803                                                                              | 1846                                                                              | 1757                                                                              | 0                                                                                 | 1792                                                                              | 1788                                                                              | 1834                                                                              | 1792                                                                                | 1752                                                                                | 1367                                                                                |
| Q Serve(g_s), s                                                      | 39.0                                                                              | 0.0                                                                               | 28.0                                                                              | 13.3                                                                              | 11.9                                                                              | 0.0                                                                               | 6.6                                                                               | 8.3                                                                               | 8.4                                                                               | 4.0                                                                                 | 5.7                                                                                 | 33.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 39.0                                                                              | 0.0                                                                               | 28.0                                                                              | 13.3                                                                              | 11.9                                                                              | 0.0                                                                               | 6.6                                                                               | 8.3                                                                               | 8.4                                                                               | 4.0                                                                                 | 5.7                                                                                 | 33.0                                                                                |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 0.12                                                                              | 0.04                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.15                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 1209                                                                              | 0                                                                                 | 620                                                                               | 271                                                                               | 257                                                                               | 0                                                                                 | 138                                                                               | 574                                                                               | 589                                                                               | 84                                                                                  | 1020                                                                                | 1196                                                                                |
| V/C Ratio(X)                                                         | 1.31                                                                              | 0.00                                                                              | 0.79                                                                              | 0.82                                                                              | 0.75                                                                              | 0.00                                                                              | 0.77                                                                              | 0.30                                                                              | 0.31                                                                              | 0.76                                                                                | 0.23                                                                                | 1.37                                                                                |
| Avail Cap(c_a), veh/h                                                | 1209                                                                              | 0                                                                                 | 620                                                                               | 358                                                                               | 341                                                                               | 0                                                                                 | 632                                                                               | 574                                                                               | 589                                                                               | 711                                                                                 | 1020                                                                                | 1196                                                                                |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 37.2                                                                              | 0.0                                                                               | 33.6                                                                              | 47.0                                                                              | 46.4                                                                              | 0.0                                                                               | 51.3                                                                              | 28.9                                                                              | 29.0                                                                              | 53.4                                                                                | 30.5                                                                                | 27.2                                                                                |
| Incr Delay (d2), s/veh                                               | 146.8                                                                             | 0.0                                                                               | 7.1                                                                               | 11.2                                                                              | 6.3                                                                               | 0.0                                                                               | 8.5                                                                               | 0.3                                                                               | 0.3                                                                               | 12.9                                                                                | 0.1                                                                                 | 170.2                                                                               |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 43.4                                                                              | 0.0                                                                               | 15.2                                                                              | 7.6                                                                               | 6.2                                                                               | 0.0                                                                               | 3.6                                                                               | 4.2                                                                               | 4.3                                                                               | 2.3                                                                                 | 2.8                                                                                 | 46.9                                                                                |
| LnGrp Delay(d),s/veh                                                 | 184.0                                                                             | 0.0                                                                               | 40.7                                                                              | 58.1                                                                              | 52.7                                                                              | 0.0                                                                               | 59.8                                                                              | 29.2                                                                              | 29.3                                                                              | 66.3                                                                                | 30.6                                                                                | 197.4                                                                               |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                  | 2080                                                                              |                                                                                   |                                                                                   | 416                                                                               |                                                                                   |                                                                                   | 460                                                                               |                                                                                   |                                                                                   | 1930                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 150.0                                                                             |                                                                                   |                                                                                   | 55.6                                                                              |                                                                                   |                                                                                   | 36.3                                                                              |                                                                                   |                                                                                   | 173.0                                                                               |                                                                                     |                                                                                     |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 20.6                                                                              | 12.8                                                                              | 37.0                                                                              |                                                                                   | 43.0                                                                              | 9.3                                                                               | 40.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   | 22.0                                                                              | 40.0                                                                              | 33.0                                                                              |                                                                                   | 39.0                                                                              | 45.0                                                                              | 28.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   | 15.3                                                                              | 8.6                                                                               | 35.0                                                                              |                                                                                   | 41.0                                                                              | 6.0                                                                               | 10.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   | 1.3                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.2                                                                               | 2.2                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 140.4                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
1: Front Street & Laurel Street

APPENDIX F

Existing + Project

PM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 108                                                                               | 638                                                                               | 31                                                                                | 228                                                                               | 379                                                                               | 119                                                                               | 8                                                                                  | 170                                                                                 | 229                                                                                 | 126                                                                                 | 327                                                                                 | 174                                                                                 |
| Future Volume (veh/h)        | 108                                                                               | 638                                                                               | 31                                                                                | 228                                                                               | 379                                                                               | 119                                                                               | 8                                                                                  | 170                                                                                 | 229                                                                                 | 126                                                                                 | 327                                                                                 | 174                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1897                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1881                                                                                | 1900                                                                                | 1827                                                                                | 1900                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 115                                                                               | 679                                                                               | 33                                                                                | 243                                                                               | 403                                                                               | 127                                                                               | 9                                                                                  | 181                                                                                 | 244                                                                                 | 134                                                                                 | 348                                                                                 | 185                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 370                                                                               | 1226                                                                              | 60                                                                                | 285                                                                               | 564                                                                               | 484                                                                               | 16                                                                                 | 353                                                                                 | 303                                                                                 | 167                                                                                 | 522                                                                                 | 443                                                                                 |
| Arrive On Green              | 0.21                                                                              | 0.35                                                                              | 0.35                                                                              | 0.16                                                                              | 0.30                                                                              | 0.30                                                                              | 0.01                                                                               | 0.19                                                                                | 0.19                                                                                | 0.10                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3500                                                                              | 170                                                                               | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                               | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Grp Volume(v), veh/h         | 115                                                                               | 350                                                                               | 362                                                                               | 243                                                                               | 403                                                                               | 127                                                                               | 9                                                                                  | 181                                                                                 | 244                                                                                 | 134                                                                                 | 348                                                                                 | 185                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1802                                                                              | 1867                                                                              | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                               | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Q Serve(g_s), s              | 4.2                                                                               | 12.0                                                                              | 12.0                                                                              | 10.0                                                                              | 14.7                                                                              | 4.6                                                                               | 0.4                                                                                | 6.6                                                                                 | 11.1                                                                                | 5.8                                                                                 | 12.5                                                                                | 7.2                                                                                 |
| Cycle Q Clear(g_c), s        | 4.2                                                                               | 12.0                                                                              | 12.0                                                                              | 10.0                                                                              | 14.7                                                                              | 4.6                                                                               | 0.4                                                                                | 6.6                                                                                 | 11.1                                                                                | 5.8                                                                                 | 12.5                                                                                | 7.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.09                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 370                                                                               | 631                                                                               | 654                                                                               | 285                                                                               | 564                                                                               | 484                                                                               | 16                                                                                 | 353                                                                                 | 303                                                                                 | 167                                                                                 | 522                                                                                 | 443                                                                                 |
| V/C Ratio(X)                 | 0.31                                                                              | 0.55                                                                              | 0.55                                                                              | 0.85                                                                              | 0.72                                                                              | 0.26                                                                              | 0.55                                                                               | 0.51                                                                                | 0.81                                                                                | 0.80                                                                                | 0.67                                                                                | 0.42                                                                                |
| Avail Cap(c_a), veh/h        | 370                                                                               | 631                                                                               | 654                                                                               | 330                                                                               | 564                                                                               | 484                                                                               | 94                                                                                 | 392                                                                                 | 337                                                                                 | 204                                                                                 | 522                                                                                 | 443                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 25.7                                                                              | 20.1                                                                              | 20.1                                                                              | 31.5                                                                              | 24.0                                                                              | 20.4                                                                              | 37.9                                                                               | 28.0                                                                                | 29.9                                                                                | 34.0                                                                                | 24.7                                                                                | 22.8                                                                                |
| Incr Delay (d2), s/veh       | 2.2                                                                               | 3.5                                                                               | 3.4                                                                               | 16.9                                                                              | 7.6                                                                               | 1.3                                                                               | 25.3                                                                               | 1.2                                                                                 | 12.3                                                                                | 16.9                                                                                | 3.2                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.3                                                                               | 6.5                                                                               | 6.8                                                                               | 6.3                                                                               | 8.8                                                                               | 2.2                                                                               | 0.3                                                                                | 3.5                                                                                 | 5.9                                                                                 | 3.6                                                                                 | 6.9                                                                                 | 3.3                                                                                 |
| LnGrp Delay(d),s/veh         | 27.9                                                                              | 23.6                                                                              | 23.5                                                                              | 48.4                                                                              | 31.5                                                                              | 21.8                                                                              | 63.2                                                                               | 29.2                                                                                | 42.1                                                                                | 50.9                                                                                | 28.0                                                                                | 23.4                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                  | C                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 827                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                   |                                                                                    | 434                                                                                 |                                                                                     |                                                                                     | 667                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 24.1                                                                              |                                                                                   |                                                                                   | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                    | 37.2                                                                                |                                                                                     |                                                                                     | 31.3                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.1                                                                              | 30.9                                                                              | 4.7                                                                               | 25.1                                                                              | 20.0                                                                              | 27.0                                                                              | 11.4                                                                               | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 14.0                                                                              | 25.0                                                                              | 4.0                                                                               | 21.0                                                                              | 16.0                                                                              | 23.0                                                                              | 9.0                                                                                | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.0                                                                              | 14.0                                                                              | 2.4                                                                               | 14.5                                                                              | 6.2                                                                               | 16.7                                                                              | 7.8                                                                                | 13.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 5.5                                                                               | 0.0                                                                               | 2.6                                                                               | 0.2                                                                               | 3.7                                                                               | 0.0                                                                                | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 31.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |
| Traffic Volume (veh/h)       | 55                                                                                | 660                                                                               | 25                                                                                | 41                                                                                | 470                                                                               | 90                                                                                | 41                                                                                | 79                                                                                | 52                                                                                | 57                                                                                 | 59                                                                                  | 41                                                                                  |
| Future Volume (veh/h)        | 55                                                                                | 660                                                                               | 25                                                                                | 41                                                                                | 470                                                                               | 90                                                                                | 41                                                                                | 79                                                                                | 52                                                                                | 57                                                                                 | 59                                                                                  | 41                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1727                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1894                                                                              | 1900                                                                              | 1900                                                                              | 1844                                                                              | 1900                                                                              | 1900                                                                               | 1805                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 59                                                                                | 702                                                                               | 27                                                                                | 44                                                                                | 500                                                                               | 96                                                                                | 44                                                                                | 84                                                                                | 55                                                                                | 61                                                                                 | 63                                                                                  | 44                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %         | 10                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                   | 107                                                                               | 968                                                                               | 37                                                                                | 106                                                                               | 812                                                                               | 156                                                                               | 392                                                                               | 243                                                                               | 159                                                                               | 161                                                                                | 155                                                                                 | 87                                                                                  |
| Arrive On Green              | 0.07                                                                              | 0.53                                                                              | 0.53                                                                              | 0.06                                                                              | 0.53                                                                              | 0.53                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                               | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 1645                                                                              | 1818                                                                              | 70                                                                                | 1810                                                                              | 1545                                                                              | 297                                                                               | 1307                                                                              | 1042                                                                              | 682                                                                               | 381                                                                                | 665                                                                                 | 371                                                                                 |
| Grp Volume(v), veh/h         | 59                                                                                | 0                                                                                 | 729                                                                               | 44                                                                                | 0                                                                                 | 596                                                                               | 44                                                                                | 0                                                                                 | 139                                                                               | 168                                                                                | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1645                                                                              | 0                                                                                 | 1888                                                                              | 1810                                                                              | 0                                                                                 | 1842                                                                              | 1307                                                                              | 0                                                                                 | 1724                                                                              | 1416                                                                               | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.4                                                                               | 0.0                                                                               | 20.1                                                                              | 1.6                                                                               | 0.0                                                                               | 15.5                                                                              | 0.0                                                                               | 0.0                                                                               | 4.6                                                                               | 2.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.4                                                                               | 0.0                                                                               | 20.1                                                                              | 1.6                                                                               | 0.0                                                                               | 15.5                                                                              | 2.1                                                                               | 0.0                                                                               | 4.6                                                                               | 7.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 0.16                                                                              | 1.00                                                                              |                                                                                   | 0.40                                                                              | 0.36                                                                               |                                                                                     | 0.26                                                                                |
| Lane Grp Cap(c), veh/h       | 107                                                                               | 0                                                                                 | 1005                                                                              | 106                                                                               | 0                                                                                 | 968                                                                               | 392                                                                               | 0                                                                                 | 403                                                                               | 403                                                                                | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.00                                                                              | 0.73                                                                              | 0.42                                                                              | 0.00                                                                              | 0.62                                                                              | 0.11                                                                              | 0.00                                                                              | 0.34                                                                              | 0.42                                                                               | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 384                                                                               | 0                                                                                 | 1005                                                                              | 423                                                                               | 0                                                                                 | 968                                                                               | 392                                                                               | 0                                                                                 | 403                                                                               | 403                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 31.0                                                                              | 0.0                                                                               | 12.2                                                                              | 31.1                                                                              | 0.0                                                                               | 11.4                                                                              | 20.9                                                                              | 0.0                                                                               | 21.9                                                                              | 22.8                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 4.4                                                                               | 0.0                                                                               | 4.6                                                                               | 2.6                                                                               | 0.0                                                                               | 2.9                                                                               | 0.6                                                                               | 0.0                                                                               | 2.3                                                                               | 3.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.2                                                                               | 0.0                                                                               | 11.6                                                                              | 0.9                                                                               | 0.0                                                                               | 8.6                                                                               | 0.7                                                                               | 0.0                                                                               | 2.5                                                                               | 3.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 35.4                                                                              | 0.0                                                                               | 16.7                                                                              | 33.7                                                                              | 0.0                                                                               | 14.3                                                                              | 21.5                                                                              | 0.0                                                                               | 24.2                                                                              | 25.9                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                  |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 788                                                                               |                                                                                   | 640                                                                               |                                                                                   |                                                                                   | 183                                                                               |                                                                                   |                                                                                   | 168                                                                               |                                                                                    |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 18.1                                                                              |                                                                                   | 15.6                                                                              |                                                                                   |                                                                                   | 23.5                                                                              |                                                                                   |                                                                                   | 25.9                                                                              |                                                                                    |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                    |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 40.5                                                                              | 20.0                                                                              |                                                                                   | 8.5                                                                               | 40.0                                                                              | 20.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Max Green Setting (G_max), s | 10.0                                                                              | 36.0                                                                              | 16.0                                                                              |                                                                                   | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I), s  | 13.6                                                                              | 22.1                                                                              | 9.4                                                                               |                                                                                   | 4.4                                                                               | 17.5                                                                              | 6.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 7.7                                                                               | 1.1                                                                               |                                                                                   | 0.1                                                                               | 9.1                                                                               | 1.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 18.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                              |  |  |  |  |                                                                                    |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                                                                                                                 | SBR                                                                               |   |      |
| Lane Configurations          |  |  |  |  |   |                                                                                   |   |      |
| Traffic Volume (veh/h)       | 116                                                                               | 61                                                                                | 56                                                                                | 425                                                                               | 657                                                                                                                                                                 | 157                                                                               |   |      |
| Future Volume (veh/h)        | 116                                                                               | 61                                                                                | 56                                                                                | 425                                                                               | 657                                                                                                                                                                 | 157                                                                               |   |      |
| Number                       | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                                                                                                   | 14                                                                                |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                                                                                                     | 1.00                                                                              |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1881                                                                              | 1845                                                                              | 1810                                                                              | 1827                                                                              | 1860                                                                                                                                                                | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h         | 121                                                                               | 64                                                                                | 58                                                                                | 443                                                                               | 684                                                                                                                                                                 | 164                                                                               |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                                                                                                   | 0                                                                                 |   |      |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                                                                                                | 0.96                                                                              |   |      |
| Percent Heavy Veh, %         | 1                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 | 1                                                                                                                                                                   | 1                                                                                 |   |      |
| Cap, veh/h                   | 443                                                                               | 387                                                                               | 345                                                                               | 1204                                                                              | 1165                                                                                                                                                                | 279                                                                               |   |      |
| Arrive On Green              | 0.25                                                                              | 0.25                                                                              | 0.20                                                                              | 0.66                                                                              | 0.41                                                                                                                                                                | 0.41                                                                              |   |      |
| Sat Flow, veh/h              | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 2922                                                                                                                                                                | 678                                                                               |   |      |
| Grp Volume(v), veh/h         | 121                                                                               | 64                                                                                | 58                                                                                | 443                                                                               | 427                                                                                                                                                                 | 421                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 1767                                                                                                                                                                | 1740                                                                              |   |      |
| Q Serve(g_s), s              | 4.6                                                                               | 2.7                                                                               | 2.4                                                                               | 9.3                                                                               | 15.9                                                                                                                                                                | 16.0                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 4.6                                                                               | 2.7                                                                               | 2.4                                                                               | 9.3                                                                               | 15.9                                                                                                                                                                | 16.0                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                                                                                                     | 0.39                                                                              |   |      |
| Lane Grp Cap(c), veh/h       | 443                                                                               | 387                                                                               | 345                                                                               | 1204                                                                              | 728                                                                                                                                                                 | 717                                                                               |   |      |
| V/C Ratio(X)                 | 0.27                                                                              | 0.17                                                                              | 0.17                                                                              | 0.37                                                                              | 0.59                                                                                                                                                                | 0.59                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 443                                                                               | 387                                                                               | 345                                                                               | 1204                                                                              | 728                                                                                                                                                                 | 717                                                                               |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 25.8                                                                              | 25.1                                                                              | 28.1                                                                              | 6.5                                                                               | 19.4                                                                                                                                                                | 19.4                                                                              |   |      |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 0.9                                                                               | 1.1                                                                               | 0.2                                                                               | 3.5                                                                                                                                                                 | 3.5                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 2.5                                                                               | 1.3                                                                               | 1.2                                                                               | 4.6                                                                               | 8.4                                                                                                                                                                 | 8.3                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 27.4                                                                              | 26.0                                                                              | 29.2                                                                              | 6.7                                                                               | 22.8                                                                                                                                                                | 22.9                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                                                                                                   | C                                                                                 |   |      |
| Approach Vol, veh/h          | 185                                                                               |                                                                                   |                                                                                   | 501                                                                               | 848                                                                                                                                                                 |                                                                                   |   |      |
| Approach Delay, s/veh        | 26.9                                                                              |                                                                                   |                                                                                   | 9.3                                                                               | 22.9                                                                                                                                                                |                                                                                   |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | C                                                                                                                                                                   |                                                                                   |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                   | 6                                                                                 | 7 | 8    |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                                                                                                     |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 25.0                                                                              | 21.0                                                                              | 39.0                                                                              |                                                                                                                                                                     |                                                                                   |   | 60.0 |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                                                                                                     |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s  |                                                                                   | 21.0                                                                              | 17.0                                                                              | 35.0                                                                              |                                                                                                                                                                     |                                                                                   |   | 56.0 |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.6                                                                               | 4.4                                                                               | 18.0                                                                              |                                                                                                                                                                     |                                                                                   |   | 11.3 |
| Green Ext Time (p_c), s      |                                                                                   | 0.4                                                                               | 0.1                                                                               | 7.9                                                                               |                                                                                                                                                                     |                                                                                   |   | 11.2 |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 18.9                                                                              |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                                                                                                     |                                                                                   |   |      |

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                                                                      |  |  |  |  |  |  |   |      |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                                                             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations                                                  |  |                                                                                   |  |  |  |                                                                                   |   |      |
| Traffic Volume (veh/h)                                               | 17                                                                                | 3                                                                                 | 5                                                                                 | 442                                                                               | 664                                                                               | 18                                                                                |   |      |
| Future Volume (veh/h)                                                | 17                                                                                | 3                                                                                 | 5                                                                                 | 442                                                                               | 664                                                                               | 18                                                                                |   |      |
| Number                                                               | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln                                               | 985                                                                               | 1900                                                                              | 1056                                                                              | 1900                                                                              | 1841                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h                                                 | 18                                                                                | 3                                                                                 | 5                                                                                 | 460                                                                               | 692                                                                               | 19                                                                                |   |      |
| Adj No. of Lanes                                                     | 0                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor                                                     | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |   |      |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 80                                                                                | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |      |
| Cap, veh/h                                                           | 16                                                                                | 3                                                                                 | 443                                                                               | 1505                                                                              | 1412                                                                              | 39                                                                                |   |      |
| Arrive On Green                                                      | 0.02                                                                              | 0.02                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              |   |      |
| Sat Flow, veh/h                                                      | 757                                                                               | 126                                                                               | 417                                                                               | 1900                                                                              | 1783                                                                              | 49                                                                                |   |      |
| Grp Volume(v), veh/h                                                 | 22                                                                                | 0                                                                                 | 5                                                                                 | 460                                                                               | 0                                                                                 | 711                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln                                             | 925                                                                               | 0                                                                                 | 417                                                                               | 1900                                                                              | 0                                                                                 | 1832                                                                              |   |      |
| Q Serve(g_s), s                                                      | 0.9                                                                               | 0.0                                                                               | 0.2                                                                               | 2.9                                                                               | 0.0                                                                               | 5.7                                                                               |   |      |
| Cycle Q Clear(g_c), s                                                | 0.9                                                                               | 0.0                                                                               | 5.8                                                                               | 2.9                                                                               | 0.0                                                                               | 5.7                                                                               |   |      |
| Prop In Lane                                                         | 0.82                                                                              | 0.14                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |   |      |
| Lane Grp Cap(c), veh/h                                               | 20                                                                                | 0                                                                                 | 443                                                                               | 1505                                                                              | 0                                                                                 | 1451                                                                              |   |      |
| V/C Ratio(X)                                                         | 1.11                                                                              | 0.00                                                                              | 0.01                                                                              | 0.31                                                                              | 0.00                                                                              | 0.49                                                                              |   |      |
| Avail Cap(c_a), veh/h                                                | 388                                                                               | 0                                                                                 | 443                                                                               | 1505                                                                              | 0                                                                                 | 1451                                                                              |   |      |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh                                             | 21.0                                                                              | 0.0                                                                               | 2.5                                                                               | 1.2                                                                               | 0.0                                                                               | 1.5                                                                               |   |      |
| Incr Delay (d2), s/veh                                               | 125.4                                                                             | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 1.2                                                                               |   |      |
| Initial Q Delay(d3),s/veh                                            | 5.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln                                             | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 3.2                                                                               |   |      |
| LnGrp Delay(d),s/veh                                                 | 151.8                                                                             | 0.0                                                                               | 2.6                                                                               | 1.7                                                                               | 0.0                                                                               | 2.7                                                                               |   |      |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |   |      |
| Approach Vol, veh/h                                                  | 22                                                                                |                                                                                   |                                                                                   | 465                                                                               | 711                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh                                                | 151.8                                                                             |                                                                                   |                                                                                   | 1.8                                                                               | 2.7                                                                               |                                                                                   |   |      |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |      |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 4.9                                                                               |                                                                                   | 38.0                                                                              |                                                                                   |                                                                                   |   | 38.0 |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s                                          |                                                                                   | 18.0                                                                              |                                                                                   | 34.0                                                                              |                                                                                   |                                                                                   |   | 34.0 |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 2.9                                                                               |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   |   | 7.8  |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   |   | 9.3  |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 5.1                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
5: Pacific Avenue & Metro Station Access

**APPENDIX F**  
Existing + Project  
PM Peak

| Intersection             |                                                                                   |          |                                                                                   |      |        |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |          |                                                                                   |      |        |                                                                                     |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL    | SBT                                                                                 |
| Lane Configurations      |  |          |  |      |        |  |
| Traffic Vol, veh/h       | 9                                                                                 | 11       | 194                                                                               | 3    | 12     | 75                                                                                  |
| Future Vol, veh/h        | 9                                                                                 | 11       | 194                                                                               | 3    | 12     | 75                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0      | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free   | Free                                                                                |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -      | None                                                                                |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -      | -                                                                                   |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Peak Hour Factor         | 90                                                                                | 90       | 90                                                                                | 90   | 90     | 90                                                                                  |
| Heavy Vehicles, %        | 100                                                                               | 90       | 4                                                                                 | 100  | 90     | 1                                                                                   |
| Mvmt Flow                | 10                                                                                | 12       | 216                                                                               | 3    | 13     | 83                                                                                  |
| Major/Minor              | Minor1                                                                            |          | Major1                                                                            |      | Major2 |                                                                                     |
| Conflicting Flow All     | 327                                                                               | 217      | 0                                                                                 | 0    | 219    | 0                                                                                   |
| Stage 1                  | 217                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 110                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy            | 7.4                                                                               | 7.1      | -                                                                                 | -    | 5      | -                                                                                   |
| Critical Hdwy Stg 1      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy Stg 2      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Follow-up Hdwy           | 4.4                                                                               | 4.11     | -                                                                                 | -    | 3.01   | -                                                                                   |
| Pot Cap-1 Maneuver       | 507                                                                               | 645      | -                                                                                 | -    | 966    | -                                                                                   |
| Stage 1                  | 633                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 719                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |        | -                                                                                   |
| Mov Cap-1 Maneuver       | 500                                                                               | 645      | -                                                                                 | -    | 966    | -                                                                                   |
| Mov Cap-2 Maneuver       | 500                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 1                  | 633                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 709                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Approach                 | WB                                                                                |          | NB                                                                                |      | SB     |                                                                                     |
| HCM Control Delay, s     | 11.6                                                                              |          | 0                                                                                 |      | 1.2    |                                                                                     |
| HCM LOS                  | B                                                                                 |          |                                                                                   |      |        |                                                                                     |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |        |                                                                                     |
| Capacity (veh/h)         | -                                                                                 | - 571    | 966                                                                               | -    |        |                                                                                     |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.039  | 0.014                                                                             | -    |        |                                                                                     |
| HCM Control Delay (s)    | -                                                                                 | - 11.6   | 8.8                                                                               | 0    |        |                                                                                     |
| HCM Lane LOS             | -                                                                                 | - B      | A                                                                                 | A    |        |                                                                                     |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |        |                                                                                     |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.2 |
| Intersection LOS          | A   |

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 18   | 4    | 35   | 0    | 4    | 2    | 4    | 0    | 23   | 181  | 6    |
| Future Vol, veh/h   | 0    | 18   | 4    | 35   | 0    | 4    | 2    | 4    | 0    | 23   | 181  | 6    |
| Peak Hour Factor    | 0.92 | 0.93 | 0.93 | 0.93 | 0.92 | 0.93 | 0.93 | 0.93 | 0.92 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, %   | 2    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 2    | 0    | 7    | 0    |
| Mvmt Flow           | 0    | 19   | 4    | 38   | 0    | 4    | 2    | 4    | 0    | 25   | 195  | 6    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 7.6 | 7.6 | 8.6 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 11%   | 32%   | 40%   | 5%    |
| Vol Thru, %            | 86%   | 7%    | 20%   | 86%   |
| Vol Right, %           | 3%    | 61%   | 40%   | 9%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 210   | 57    | 10    | 88    |
| LT Vol                 | 23    | 18    | 4     | 4     |
| Through Vol            | 181   | 4     | 2     | 76    |
| RT Vol                 | 6     | 35    | 4     | 8     |
| Lane Flow Rate         | 226   | 61    | 11    | 95    |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.257 | 0.073 | 0.013 | 0.109 |
| Departure Headway (Hd) | 4.102 | 4.304 | 4.509 | 4.152 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 867   | 837   | 798   | 850   |
| Service Time           | 2.168 | 2.304 | 2.511 | 2.246 |
| HCM Lane V/C Ratio     | 0.261 | 0.073 | 0.014 | 0.112 |
| HCM Control Delay      | 8.6   | 7.6   | 7.6   | 7.8   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 1     | 0.2   | 0     | 0.4   |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement            | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |
| Traffic Vol, veh/h  | 0    | 4    | 76   | 8    |
| Future Vol, veh/h   | 0    | 4    | 76   | 8    |
| Peak Hour Factor    | 0.92 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, %   | 2    | 0    | 17   | 0    |
| Mvmt Flow           | 0    | 4    | 82   | 9    |
| Number of Lanes     | 0    | 0    | 1    | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.8 |
| HCM LOS                    | A   |

# APPENDIX F

Santa Cruz DRP Study

Existing + Project

7: Pacific Street & Front Street & Mission Street/Water Street

PM Peak

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | SBL2                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |  |  |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 152                                                                               | 629                                                                               | 110                                                                               | 19                                                                                | 108                                                                               | 49                                                                                | 630                                                                                | 3                                                                                   | 19                                                                                  | 131                                                                                 | 33                                                                                  | 174                                                                                 |
| Future Volume (vph)               | 152                                                                               | 629                                                                               | 110                                                                               | 19                                                                                | 108                                                                               | 49                                                                                | 630                                                                                | 3                                                                                   | 19                                                                                  | 131                                                                                 | 33                                                                                  | 174                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1787                                                                              | 3574                                                                              | 1590                                                                              |                                                                                   | 1787                                                                              | 1770                                                                              | 3572                                                                               |                                                                                     |                                                                                     |                                                                                     | 1744                                                                                | 1599                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1787                                                                              | 3574                                                                              | 1590                                                                              |                                                                                   | 1787                                                                              | 1770                                                                              | 3572                                                                               |                                                                                     |                                                                                     |                                                                                     | 1744                                                                                | 1599                                                                                |
| Peak-hour factor, PHF             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 163                                                                               | 676                                                                               | 118                                                                               | 20                                                                                | 116                                                                               | 53                                                                                | 677                                                                                | 3                                                                                   | 20                                                                                  | 141                                                                                 | 35                                                                                  | 187                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 33                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 111                                                                                 |
| Lane Group Flow (vph)             | 163                                                                               | 676                                                                               | 105                                                                               | 0                                                                                 | 116                                                                               | 53                                                                                | 679                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 196                                                                                 | 76                                                                                  |
| Heavy Vehicles (%)                | 1%                                                                                | 1%                                                                                | 1%                                                                                | 5%                                                                                | 1%                                                                                | 2%                                                                                | 1%                                                                                 | 0%                                                                                  | 5%                                                                                  | 5%                                                                                  | 3%                                                                                  | 1%                                                                                  |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 |                                                                                     | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 5                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Actuated Green, G (s)             | 12.6                                                                              | 37.4                                                                              | 37.4                                                                              |                                                                                   | 9.2                                                                               | 9.2                                                                               | 34.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 24.0                                                                                | 24.0                                                                                |
| Effective Green, g (s)            | 12.6                                                                              | 37.4                                                                              | 37.4                                                                              |                                                                                   | 9.2                                                                               | 9.2                                                                               | 34.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 24.0                                                                                | 24.0                                                                                |
| Actuated g/C Ratio                | 0.15                                                                              | 0.45                                                                              | 0.45                                                                              |                                                                                   | 0.11                                                                              | 0.11                                                                              | 0.41                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.29                                                                                | 0.29                                                                                |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 272                                                                               | 1618                                                                              | 719                                                                               |                                                                                   | 199                                                                               | 197                                                                               | 1470                                                                               |                                                                                     |                                                                                     |                                                                                     | 506                                                                                 | 464                                                                                 |
| v/s Ratio Prot                    | c0.09                                                                             | c0.19                                                                             |                                                                                   |                                                                                   | 0.06                                                                              | 0.03                                                                              | c0.19                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.11                                                                                | 0.05                                                                                |
| v/c Ratio                         | 0.60                                                                              | 0.42                                                                              | 0.15                                                                              |                                                                                   | 0.58                                                                              | 0.27                                                                              | 0.46                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.39                                                                                | 0.16                                                                                |
| Uniform Delay, d1                 | 32.6                                                                              | 15.3                                                                              | 13.2                                                                              |                                                                                   | 34.9                                                                              | 33.6                                                                              | 17.7                                                                               |                                                                                     |                                                                                     |                                                                                     | 23.4                                                                                | 21.8                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 3.5                                                                               | 0.2                                                                               | 0.1                                                                               |                                                                                   | 4.3                                                                               | 0.7                                                                               | 1.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 2.2                                                                                 | 0.8                                                                                 |
| Delay (s)                         | 36.2                                                                              | 15.4                                                                              | 13.3                                                                              |                                                                                   | 39.2                                                                              | 34.4                                                                              | 18.7                                                                               |                                                                                     |                                                                                     |                                                                                     | 25.7                                                                                | 22.6                                                                                |
| Level of Service                  | D                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | C                                                                                 | B                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 18.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 22.5                                                                               |                                                                                     |                                                                                     |                                                                                     | 24.2                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                          |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 82.6                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 46.0%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                               |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Existing + Project  
PM Peak

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |                                                                                   | ↔↔                                                                                |                                                                                   | ↔                                                                                 | ↔                                                                                 | ↔                                                                                 |                                                                                   | ↔↔                                                                                |                                                                                   | ↔                                                                                   | ↔                                                                                   |                                                                                     |
| Traffic Volume (veh/h)                                               | 50                                                                                | 111                                                                               | 42                                                                                | 427                                                                               | 94                                                                                | 36                                                                                | 10                                                                                | 318                                                                               | 221                                                                               | 79                                                                                  | 406                                                                                 | 36                                                                                  |
| Future Volume (veh/h)                                                | 50                                                                                | 111                                                                               | 42                                                                                | 427                                                                               | 94                                                                                | 36                                                                                | 10                                                                                | 318                                                                               | 221                                                                               | 79                                                                                  | 406                                                                                 | 36                                                                                  |
| Number                                                               | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1900                                                                              | 1859                                                                              | 1900                                                                              | 1900                                                                              | 1880                                                                              | 1900                                                                              | 1900                                                                              | 1832                                                                              | 1900                                                                              | 1881                                                                                | 1817                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                 | 53                                                                                | 117                                                                               | 44                                                                                | 520                                                                               | 0                                                                                 | 0                                                                                 | 11                                                                                | 335                                                                               | 233                                                                               | 83                                                                                  | 427                                                                                 | 38                                                                                  |
| Adj No. of Lanes                                                     | 0                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                 | 4                                                                                 | 4                                                                                 | 4                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 1                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                                                           | 80                                                                                | 182                                                                               | 71                                                                                | 1467                                                                              | 0                                                                                 | 655                                                                               | 54                                                                                | 674                                                                               | 451                                                                               | 266                                                                                 | 573                                                                                 | 51                                                                                  |
| Arrive On Green                                                      | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              | 0.41                                                                              | 0.00                                                                              | 0.00                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h                                                      | 851                                                                               | 1939                                                                              | 753                                                                               | 3619                                                                              | 0                                                                                 | 1615                                                                              | 21                                                                                | 1934                                                                              | 1295                                                                              | 848                                                                                 | 1644                                                                                | 146                                                                                 |
| Grp Volume(v), veh/h                                                 | 113                                                                               | 0                                                                                 | 101                                                                               | 520                                                                               | 0                                                                                 | 0                                                                                 | 320                                                                               | 0                                                                                 | 259                                                                               | 83                                                                                  | 0                                                                                   | 465                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             | 1817                                                                              | 0                                                                                 | 1726                                                                              | 1810                                                                              | 0                                                                                 | 1615                                                                              | 1811                                                                              | 0                                                                                 | 1439                                                                              | 848                                                                                 | 0                                                                                   | 1791                                                                                |
| Q Serve(g_s), s                                                      | 4.8                                                                               | 0.0                                                                               | 4.4                                                                               | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.3                                                                              | 6.8                                                                                 | 0.0                                                                                 | 18.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 4.8                                                                               | 0.0                                                                               | 4.4                                                                               | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 18.0                                                                              | 0.0                                                                               | 11.3                                                                              | 18.1                                                                                | 0.0                                                                                 | 18.0                                                                                |
| Prop In Lane                                                         | 0.47                                                                              |                                                                                   | 0.44                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.03                                                                              |                                                                                   | 0.90                                                                              | 1.00                                                                                |                                                                                     | 0.08                                                                                |
| Lane Grp Cap(c), veh/h                                               | 171                                                                               | 0                                                                                 | 162                                                                               | 1467                                                                              | 0                                                                                 | 655                                                                               | 679                                                                               | 0                                                                                 | 502                                                                               | 266                                                                                 | 0                                                                                   | 625                                                                                 |
| V/C Ratio(X)                                                         | 0.66                                                                              | 0.00                                                                              | 0.62                                                                              | 0.35                                                                              | 0.00                                                                              | 0.00                                                                              | 0.47                                                                              | 0.00                                                                              | 0.52                                                                              | 0.31                                                                                | 0.00                                                                                | 0.74                                                                                |
| Avail Cap(c_a), veh/h                                                | 368                                                                               | 0                                                                                 | 350                                                                               | 1467                                                                              | 0                                                                                 | 655                                                                               | 958                                                                               | 0                                                                                 | 729                                                                               | 400                                                                                 | 0                                                                                   | 907                                                                                 |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 34.6                                                                              | 0.0                                                                               | 34.4                                                                              | 16.3                                                                              | 0.0                                                                               | 0.0                                                                               | 20.3                                                                              | 0.0                                                                               | 20.4                                                                              | 27.6                                                                                | 0.0                                                                                 | 22.6                                                                                |
| Incr Delay (d2), s/veh                                               | 4.3                                                                               | 0.0                                                                               | 3.8                                                                               | 0.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 0.8                                                                               | 0.7                                                                                 | 0.0                                                                                 | 1.9                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 2.6                                                                               | 0.0                                                                               | 2.3                                                                               | 4.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.6                                                                               | 0.0                                                                               | 4.6                                                                               | 1.6                                                                                 | 0.0                                                                                 | 9.3                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 38.9                                                                              | 0.0                                                                               | 38.3                                                                              | 17.0                                                                              | 0.0                                                                               | 0.0                                                                               | 20.8                                                                              | 0.0                                                                               | 21.2                                                                              | 28.3                                                                                | 0.0                                                                                 | 24.6                                                                                |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   |                                                                                     | C                                                                                   |
| Approach Vol, veh/h                                                  | 214                                                                               |                                                                                   |                                                                                   | 520                                                                               |                                                                                   |                                                                                   | 579                                                                               |                                                                                   |                                                                                   | 548                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 38.6                                                                              |                                                                                   |                                                                                   | 17.0                                                                              |                                                                                   |                                                                                   | 21.0                                                                              |                                                                                   |                                                                                   | 25.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             | 11.4                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   | 31.5                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          | 16.0                                                                              |                                                                                   |                                                                                   | 40.0                                                                              |                                                                                   |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                   | 40.0                                                                                |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         | 6.8                                                                               |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   | 20.0                                                                                |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              | 0.7                                                                               |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                   | 1.9                                                                               |                                                                                   |                                                                                   | 7.5                                                                                 |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 23.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

**Intersection**

Intersection Delay, s/veh 8.9

Intersection LOS A

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |      |      |      |      |
| Traffic Vol, veh/h  | 0    | 12   | 79   | 38   | 0    | 59   | 74   | 33   | 0    | 21   | 91   | 57   | 0    | 0    | 0    | 0    |
| Future Vol, veh/h   | 0    | 12   | 79   | 38   | 0    | 59   | 74   | 33   | 0    | 21   | 91   | 57   | 0    | 0    | 0    | 0    |
| Peak Hour Factor    | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 | 0.92 | 0.91 | 0.91 | 0.91 |
| Heavy Vehicles, %   | 2    | 0    | 0    | 2    | 2    | 22   | 2    | 14   | 2    | 0    | 1    | 9    | 2    | 0    | 0    | 0    |
| Mvmt Flow           | 0    | 13   | 87   | 42   | 0    | 65   | 81   | 36   | 0    | 23   | 100  | 63   | 0    | 0    | 0    | 0    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  |     |
| Opposing Lanes             | 1   | 1   | 0   |
| Conflicting Approach Left  |     | NB  | EB  |
| Conflicting Lanes Left     | 0   | 1   | 1   |
| Conflicting Approach Right | NB  |     | WB  |
| Conflicting Lanes Right    | 1   | 0   | 1   |
| HCM Control Delay          | 8.3 | 9.4 | 8.9 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, %            | 12%   | 9%    | 36%   |
| Vol Thru, %            | 54%   | 61%   | 45%   |
| Vol Right, %           | 34%   | 29%   | 20%   |
| Sign Control           | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 169   | 129   | 166   |
| LT Vol                 | 21    | 12    | 59    |
| Through Vol            | 91    | 79    | 74    |
| RT Vol                 | 57    | 38    | 33    |
| Lane Flow Rate         | 186   | 142   | 182   |
| Geometry Grp           | 1     | 1     | 1     |
| Degree of Util (X)     | 0.231 | 0.173 | 0.244 |
| Departure Headway (Hd) | 4.48  | 4.393 | 4.815 |
| Convergence, Y/N       | Yes   | Yes   | Yes   |
| Cap                    | 802   | 817   | 746   |
| Service Time           | 2.507 | 2.424 | 2.844 |
| HCM Lane V/C Ratio     | 0.232 | 0.174 | 0.244 |
| HCM Control Delay      | 8.9   | 8.3   | 9.4   |
| HCM Lane LOS           | A     | A     | A     |
| HCM 95th-tile Q        | 0.9   | 0.6   | 1     |

| Intersection             |        |                                                                                   |                                                                                   |      |      |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|
| Int Delay, s/veh         | 3.6    |                                                                                   |                                                                                   |      |      |      |
| Movement                 | WBL    | WBR                                                                               | NBT                                                                               | NBR  | SBL  | SBT  |
| Lane Configurations      |        |  |  |      |      |      |
| Traffic Vol, veh/h       | 1      | 142                                                                               | 128                                                                               | 140  | 0    | 0    |
| Future Vol, veh/h        | 1      | 142                                                                               | 128                                                                               | 140  | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free | Free | Free |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -    | None |
| Storage Length           | -      | 0                                                                                 | -                                                                                 | -    | -    | -    |
| Veh in Median Storage, # | 0      | -                                                                                 | 0                                                                                 | -    | -    | -    |
| Grade, %                 | 0      | -                                                                                 | 0                                                                                 | -    | -    | 0    |
| Peak Hour Factor         | 92     | 92                                                                                | 92                                                                                | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 2                                                                                 | 1    | 0    | 0    |
| Mvmt Flow                | 1      | 154                                                                               | 139                                                                               | 152  | 0    | 0    |
| Major/Minor              | Minor1 | Major1                                                                            |                                                                                   |      |      |      |
| Conflicting Flow All     | 215    | 215                                                                               | 0                                                                                 | 0    |      |      |
| Stage 1                  | 215    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy            | 6.4    | 6.2                                                                               | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 1      | 5.4    | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Follow-up Hdwy           | 3.5    | 3.3                                                                               | -                                                                                 | -    |      |      |
| Pot Cap-1 Maneuver       | 778    | 830                                                                               | -                                                                                 | -    |      |      |
| Stage 1                  | 826    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Platoon blocked, %       |        |                                                                                   | -                                                                                 | -    |      |      |
| Mov Cap-1 Maneuver       | 778    | 830                                                                               | -                                                                                 | -    |      |      |
| Mov Cap-2 Maneuver       | 778    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 1                  | 826    | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Approach                 | WB     | NB                                                                                |                                                                                   |      |      |      |
| HCM Control Delay, s     | 10.3   | 0                                                                                 |                                                                                   |      |      |      |
| HCM LOS                  | B      |                                                                                   |                                                                                   |      |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBRWBLn1                                                                          |                                                                                   |      |      |      |
| Capacity (veh/h)         | -      | -                                                                                 | 830                                                                               |      |      |      |
| HCM Lane V/C Ratio       | -      | -                                                                                 | 0.186                                                                             |      |      |      |
| HCM Control Delay (s)    | -      | -                                                                                 | 10.3                                                                              |      |      |      |
| HCM Lane LOS             | -      | -                                                                                 | B                                                                                 |      |      |      |
| HCM 95th %tile Q(veh)    | -      | -                                                                                 | 0.7                                                                               |      |      |      |

Santa Cruz DRP Study  
11: Ocean Street & Water Street

APPENDIX F

Existing + Project  
PM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 346                                                                               | 734                                                                               | 111                                                                               | 112                                                                               | 586                                                                               | 227                                                                               | 120                                                                                | 553                                                                                 | 98                                                                                  | 290                                                                                 | 856                                                                                 | 387                                                                                 |
| Future Volume (veh/h)        | 346                                                                               | 734                                                                               | 111                                                                               | 112                                                                               | 586                                                                               | 227                                                                               | 120                                                                                | 553                                                                                 | 98                                                                                  | 290                                                                                 | 856                                                                                 | 387                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1881                                                                                | 1881                                                                                | 1881                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 360                                                                               | 765                                                                               | 116                                                                               | 117                                                                               | 610                                                                               | 0                                                                                 | 125                                                                                | 576                                                                                 | 102                                                                                 | 302                                                                                 | 892                                                                                 | 0                                                                                   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 447                                                                               | 1022                                                                              | 155                                                                               | 148                                                                               | 1002                                                                              | 453                                                                               | 157                                                                                | 829                                                                                 | 371                                                                                 | 343                                                                                 | 1216                                                                                | 533                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.33                                                                              | 0.33                                                                              | 0.08                                                                              | 0.28                                                                              | 0.00                                                                              | 0.09                                                                               | 0.23                                                                                | 0.23                                                                                | 0.19                                                                                | 0.34                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3113                                                                              | 472                                                                               | 1810                                                                              | 3574                                                                              | 1615                                                                              | 1810                                                                               | 3574                                                                                | 1599                                                                                | 1792                                                                                | 3610                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 360                                                                               | 439                                                                               | 442                                                                               | 117                                                                               | 610                                                                               | 0                                                                                 | 125                                                                                | 576                                                                                 | 102                                                                                 | 302                                                                                 | 892                                                                                 | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1787                                                                              | 1798                                                                              | 1810                                                                              | 1787                                                                              | 1615                                                                              | 1810                                                                               | 1787                                                                                | 1599                                                                                | 1792                                                                                | 1805                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 9.8                                                                               | 21.0                                                                              | 21.0                                                                              | 6.1                                                                               | 14.2                                                                              | 0.0                                                                               | 6.5                                                                                | 14.2                                                                                | 5.0                                                                                 | 15.7                                                                                | 20.9                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.8                                                                               | 21.0                                                                              | 21.0                                                                              | 6.1                                                                               | 14.2                                                                              | 0.0                                                                               | 6.5                                                                                | 14.2                                                                                | 5.0                                                                                 | 15.7                                                                                | 20.9                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.26                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 447                                                                               | 587                                                                               | 590                                                                               | 148                                                                               | 1002                                                                              | 453                                                                               | 157                                                                                | 829                                                                                 | 371                                                                                 | 343                                                                                 | 1216                                                                                | 533                                                                                 |
| V/C Ratio(X)                 | 0.81                                                                              | 0.75                                                                              | 0.75                                                                              | 0.79                                                                              | 0.61                                                                              | 0.00                                                                              | 0.80                                                                               | 0.69                                                                                | 0.28                                                                                | 0.88                                                                                | 0.73                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 645                                                                               | 707                                                                               | 711                                                                               | 245                                                                               | 1228                                                                              | 555                                                                               | 264                                                                                | 930                                                                                 | 416                                                                                 | 522                                                                                 | 1465                                                                                | 643                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 40.6                                                                              | 28.7                                                                              | 28.7                                                                              | 43.3                                                                              | 30.0                                                                              | 0.0                                                                               | 43.0                                                                               | 33.8                                                                                | 30.3                                                                                | 37.8                                                                                | 28.1                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 4.9                                                                               | 3.6                                                                               | 3.6                                                                               | 9.1                                                                               | 0.6                                                                               | 0.0                                                                               | 8.9                                                                                | 2.0                                                                                 | 0.4                                                                                 | 10.9                                                                                | 1.6                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.0                                                                               | 11.0                                                                              | 11.0                                                                              | 3.4                                                                               | 7.1                                                                               | 0.0                                                                               | 3.6                                                                                | 7.2                                                                                 | 2.2                                                                                 | 8.8                                                                                 | 10.7                                                                                | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 45.5                                                                              | 32.3                                                                              | 32.3                                                                              | 52.5                                                                              | 30.6                                                                              | 0.0                                                                               | 51.9                                                                               | 35.8                                                                                | 30.7                                                                                | 48.6                                                                                | 29.6                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                  | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 1241                                                                              |                                                                                   |                                                                                   |                                                                                   | 727                                                                               |                                                                                   |                                                                                    |                                                                                     | 803                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 36.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.1                                                                              |                                                                                   |                                                                                    |                                                                                     | 37.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.8                                                                              | 35.5                                                                              | 12.3                                                                              | 36.4                                                                              | 16.5                                                                              | 30.9                                                                              | 22.4                                                                               | 26.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.0                                                                              | 38.0                                                                              | 14.0                                                                              | 39.0                                                                              | 18.0                                                                              | 33.0                                                                              | 28.0                                                                               | 25.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.1                                                                               | 23.0                                                                              | 8.5                                                                               | 22.9                                                                              | 11.8                                                                              | 16.2                                                                              | 17.7                                                                               | 16.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 8.5                                                                               | 0.1                                                                               | 9.4                                                                               | 0.7                                                                               | 9.2                                                                               | 0.7                                                                                | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 35.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |   |  |  |  |
| Traffic Volume (veh/h)       | 228                                                                               | 1327                                                                              | 77                                                                                | 328                                                                               | 1277                                                                              | 472                                                                               | 102                                                                               | 253                                                                               | 447                                                                                | 648                                                                                 | 316                                                                                 | 249                                                                                 |
| Future Volume (veh/h)        | 228                                                                               | 1327                                                                              | 77                                                                                | 328                                                                               | 1277                                                                              | 472                                                                               | 102                                                                               | 253                                                                               | 447                                                                                | 648                                                                                 | 316                                                                                 | 249                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                 | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1881                                                                              | 1847                                                                              | 1900                                                                              | 1845                                                                              | 1863                                                                              | 1810                                                                              | 1881                                                                              | 1845                                                                              | 1881                                                                               | 1863                                                                                | 1845                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 243                                                                               | 1412                                                                              | 0                                                                                 | 349                                                                               | 1359                                                                              | 0                                                                                 | 109                                                                               | 269                                                                               | 476                                                                                | 689                                                                                 | 336                                                                                 | 265                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %         | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 2                                                                                 | 5                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                  | 2                                                                                   | 3                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 262                                                                               | 1874                                                                              | 0                                                                                 | 388                                                                               | 1726                                                                              | 522                                                                               | 347                                                                               | 357                                                                               | 545                                                                                | 824                                                                                 | 442                                                                                 | 379                                                                                 |
| Arrive On Green              | 0.15                                                                              | 0.37                                                                              | 0.00                                                                              | 0.11                                                                              | 0.34                                                                              | 0.00                                                                              | 0.19                                                                              | 0.19                                                                              | 0.19                                                                               | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h              | 1792                                                                              | 5207                                                                              | 0                                                                                 | 3408                                                                              | 5085                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 2814                                                                               | 3442                                                                                | 1845                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 243                                                                               | 1412                                                                              | 0                                                                                 | 349                                                                               | 1359                                                                              | 0                                                                                 | 109                                                                               | 269                                                                               | 476                                                                                | 689                                                                                 | 336                                                                                 | 265                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1792                                                                              | 1680                                                                              | 0                                                                                 | 1704                                                                              | 1695                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 1407                                                                               | 1721                                                                                | 1845                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 26.3                                                                              | 48.0                                                                              | 0.0                                                                               | 19.9                                                                              | 47.3                                                                              | 0.0                                                                               | 10.3                                                                              | 27.0                                                                              | 32.2                                                                               | 37.4                                                                                | 33.3                                                                                | 30.0                                                                                |
| Cycle Q Clear(g_c), s        | 26.3                                                                              | 48.0                                                                              | 0.0                                                                               | 19.9                                                                              | 47.3                                                                              | 0.0                                                                               | 10.3                                                                              | 27.0                                                                              | 32.2                                                                               | 37.4                                                                                | 33.3                                                                                | 30.0                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 262                                                                               | 1874                                                                              | 0                                                                                 | 388                                                                               | 1726                                                                              | 522                                                                               | 347                                                                               | 357                                                                               | 545                                                                                | 824                                                                                 | 442                                                                                 | 379                                                                                 |
| V/C Ratio(X)                 | 0.93                                                                              | 0.75                                                                              | 0.00                                                                              | 0.90                                                                              | 0.79                                                                              | 0.00                                                                              | 0.31                                                                              | 0.75                                                                              | 0.87                                                                               | 0.84                                                                                | 0.76                                                                                | 0.70                                                                                |
| Avail Cap(c_a), veh/h        | 328                                                                               | 1874                                                                              | 0                                                                                 | 451                                                                               | 1726                                                                              | 522                                                                               | 347                                                                               | 357                                                                               | 545                                                                                | 824                                                                                 | 442                                                                                 | 379                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 82.8                                                                              | 53.8                                                                              | 0.0                                                                               | 85.9                                                                              | 58.5                                                                              | 0.0                                                                               | 68.0                                                                              | 74.8                                                                              | 76.9                                                                               | 71.0                                                                                | 69.5                                                                                | 68.2                                                                                |
| Incr Delay (d2), s/veh       | 27.9                                                                              | 2.9                                                                               | 0.0                                                                               | 18.9                                                                              | 3.7                                                                               | 0.0                                                                               | 2.4                                                                               | 13.7                                                                              | 17.5                                                                               | 9.8                                                                                 | 11.7                                                                                | 10.3                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 15.1                                                                              | 22.9                                                                              | 0.0                                                                               | 10.4                                                                              | 22.7                                                                              | 0.0                                                                               | 5.3                                                                               | 15.2                                                                              | 13.9                                                                               | 18.9                                                                                | 18.4                                                                                | 14.2                                                                                |
| LnGrp Delay(d),s/veh         | 110.7                                                                             | 56.7                                                                              | 0.0                                                                               | 104.8                                                                             | 62.2                                                                              | 0.0                                                                               | 70.4                                                                              | 88.5                                                                              | 94.4                                                                               | 80.9                                                                                | 81.2                                                                                | 78.5                                                                                |
| LnGrp LOS                    | F                                                                                 | E                                                                                 |                                                                                   | F                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | F                                                                                  | F                                                                                   | F                                                                                   | E                                                                                   |
| Approach Vol, veh/h          | 1655                                                                              |                                                                                   |                                                                                   | 1708                                                                              |                                                                                   |                                                                                   | 854                                                                               |                                                                                   |                                                                                    | 1290                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 64.6                                                                              |                                                                                   |                                                                                   | 70.9                                                                              |                                                                                   |                                                                                   | 89.4                                                                              |                                                                                   |                                                                                    | 80.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 26.4                                                                              | 77.0                                                                              |                                                                                   | 42.0                                                                              | 32.7                                                                              | 70.6                                                                              |                                                                                   | 51.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 26.3                                                                              | 73.0                                                                              |                                                                                   | 38.0                                                                              | 36.0                                                                              | 63.0                                                                              |                                                                                   | 47.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+T1), s | 21.9                                                                              | 50.0                                                                              |                                                                                   | 34.2                                                                              | 28.3                                                                              | 49.3                                                                              |                                                                                   | 39.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 19.7                                                                              |                                                                                   | 1.5                                                                               | 0.4                                                                               | 12.3                                                                              |                                                                                   | 3.6                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 74.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                                                                      |  |  |  |  |  |  |  |  |  |    |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)                                               | 1312                                                                              | 486                                                                               | 66                                                                                | 11                                                                                | 412                                                                               | 30                                                                                | 74                                                                                | 284                                                                               | 19                                                                                | 42                                                                                  | 275                                                                                 | 1380                                                                                |
| Future Volume (veh/h)                                                | 1312                                                                              | 486                                                                               | 66                                                                                | 11                                                                                | 412                                                                               | 30                                                                                | 74                                                                                | 284                                                                               | 19                                                                                | 42                                                                                  | 275                                                                                 | 1380                                                                                |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1881                                                                              | 1882                                                                              | 1900                                                                              | 1900                                                                              | 1850                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 | 1353                                                                              | 501                                                                               | 68                                                                                | 11                                                                                | 425                                                                               | 0                                                                                 | 76                                                                                | 293                                                                               | 20                                                                                | 43                                                                                  | 284                                                                                 | 1423                                                                                |
| Adj No. of Lanes                                                     | 2                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 2                                                                                   |
| Peak Hour Factor                                                     | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           | 1238                                                                              | 561                                                                               | 76                                                                                | 13                                                                                | 539                                                                               | 0                                                                                 | 100                                                                               | 1114                                                                              | 76                                                                                | 56                                                                                  | 1083                                                                                | 1263                                                                                |
| Arrive On Green                                                      | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.15                                                                              | 0.15                                                                              | 0.00                                                                              | 0.06                                                                              | 0.32                                                                              | 0.32                                                                              | 0.03                                                                                | 0.30                                                                                | 0.30                                                                                |
| Sat Flow, veh/h                                                      | 3583                                                                              | 1623                                                                              | 220                                                                               | 87                                                                                | 3608                                                                              | 0                                                                                 | 1792                                                                              | 3431                                                                              | 233                                                                               | 1810                                                                                | 3610                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                                                 | 1353                                                                              | 0                                                                                 | 569                                                                               | 234                                                                               | 202                                                                               | 0                                                                                 | 76                                                                                | 153                                                                               | 160                                                                               | 43                                                                                  | 284                                                                                 | 1423                                                                                |
| Grp Sat Flow(s),veh/h/ln                                             | 1792                                                                              | 0                                                                                 | 1843                                                                              | 1845                                                                              | 1757                                                                              | 0                                                                                 | 1792                                                                              | 1805                                                                              | 1859                                                                              | 1810                                                                                | 1805                                                                                | 1393                                                                                |
| Q Serve(g_s), s                                                      | 38.0                                                                              | 0.0                                                                               | 32.2                                                                              | 13.5                                                                              | 12.1                                                                              | 0.0                                                                               | 4.6                                                                               | 6.9                                                                               | 7.0                                                                               | 2.6                                                                                 | 6.6                                                                                 | 33.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 38.0                                                                              | 0.0                                                                               | 32.2                                                                              | 13.5                                                                              | 12.1                                                                              | 0.0                                                                               | 4.6                                                                               | 6.9                                                                               | 7.0                                                                               | 2.6                                                                                 | 6.6                                                                                 | 33.0                                                                                |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 0.12                                                                              | 0.05                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 1238                                                                              | 0                                                                                 | 637                                                                               | 283                                                                               | 269                                                                               | 0                                                                                 | 100                                                                               | 586                                                                               | 604                                                                               | 56                                                                                  | 1083                                                                                | 1263                                                                                |
| V/C Ratio(X)                                                         | 1.09                                                                              | 0.00                                                                              | 0.89                                                                              | 0.83                                                                              | 0.75                                                                              | 0.00                                                                              | 0.76                                                                              | 0.26                                                                              | 0.26                                                                              | 0.76                                                                                | 0.26                                                                                | 1.13                                                                                |
| Avail Cap(c_a), veh/h                                                | 1238                                                                              | 0                                                                                 | 637                                                                               | 369                                                                               | 351                                                                               | 0                                                                                 | 668                                                                               | 586                                                                               | 604                                                                               | 757                                                                                 | 1083                                                                                | 1263                                                                                |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 36.0                                                                              | 0.0                                                                               | 34.1                                                                              | 45.2                                                                              | 44.6                                                                              | 0.0                                                                               | 51.2                                                                              | 27.4                                                                              | 27.4                                                                              | 52.9                                                                                | 29.3                                                                                | 25.5                                                                                |
| Incr Delay (d2), s/veh                                               | 55.0                                                                              | 0.0                                                                               | 15.1                                                                              | 11.2                                                                              | 6.4                                                                               | 0.0                                                                               | 11.0                                                                              | 0.2                                                                               | 0.2                                                                               | 18.7                                                                                | 0.1                                                                                 | 67.7                                                                                |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 28.2                                                                              | 0.0                                                                               | 18.9                                                                              | 7.8                                                                               | 6.4                                                                               | 0.0                                                                               | 2.6                                                                               | 3.5                                                                               | 3.6                                                                               | 1.6                                                                                 | 3.3                                                                                 | 31.0                                                                                |
| LnGrp Delay(d),s/veh                                                 | 91.0                                                                              | 0.0                                                                               | 49.2                                                                              | 56.4                                                                              | 51.0                                                                              | 0.0                                                                               | 62.2                                                                              | 27.7                                                                              | 27.7                                                                              | 71.6                                                                                | 29.4                                                                                | 93.1                                                                                |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                  | 1922                                                                              |                                                                                   |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 389                                                                               |                                                                                   |                                                                                   | 1750                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 78.6                                                                              |                                                                                   |                                                                                   | 53.9                                                                              |                                                                                   |                                                                                   | 34.4                                                                              |                                                                                   |                                                                                   | 82.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 20.9                                                                              | 10.2                                                                              | 37.0                                                                              |                                                                                   | 42.0                                                                              | 7.4                                                                               | 39.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   | 22.0                                                                              | 41.0                                                                              | 33.0                                                                              |                                                                                   | 38.0                                                                              | 46.0                                                                              | 28.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 15.5                                                                              | 6.6                                                                               | 35.0                                                                              |                                                                                   | 40.0                                                                              | 4.6                                                                               | 9.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   | 1.4                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.1                                                                               | 1.9                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 73.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
1: Front Street & Laurel Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 165                                                                               | 996                                                                               | 29                                                                                | 227                                                                               | 830                                                                               | 195                                                                               | 4                                                                                   | 228                                                                                 | 254                                                                                 | 202                                                                                 | 366                                                                                 | 262                                                                                 |
| Future Volume (veh/h)        | 165                                                                               | 996                                                                               | 29                                                                                | 227                                                                               | 830                                                                               | 195                                                                               | 4                                                                                   | 228                                                                                 | 254                                                                                 | 202                                                                                 | 366                                                                                 | 262                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1898                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                                | 1881                                                                                | 1900                                                                                | 1827                                                                                | 1900                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 179                                                                               | 1083                                                                              | 32                                                                                | 247                                                                               | 902                                                                               | 212                                                                               | 4                                                                                   | 248                                                                                 | 276                                                                                 | 220                                                                                 | 398                                                                                 | 285                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 357                                                                               | 1327                                                                              | 39                                                                                | 286                                                                               | 616                                                                               | 529                                                                               | 8                                                                                   | 365                                                                                 | 313                                                                                 | 131                                                                                 | 504                                                                                 | 429                                                                                 |
| Arrive On Green              | 0.20                                                                              | 0.37                                                                              | 0.37                                                                              | 0.16                                                                              | 0.33                                                                              | 0.33                                                                              | 0.00                                                                                | 0.19                                                                                | 0.19                                                                                | 0.08                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3577                                                                              | 106                                                                               | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                                | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Grp Volume(v), veh/h         | 179                                                                               | 546                                                                               | 569                                                                               | 247                                                                               | 902                                                                               | 212                                                                               | 4                                                                                   | 248                                                                                 | 276                                                                                 | 220                                                                                 | 398                                                                                 | 285                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1803                                                                              | 1880                                                                              | 1810                                                                              | 1881                                                                              | 1615                                                                              | 1810                                                                                | 1881                                                                                | 1615                                                                                | 1740                                                                                | 1900                                                                                | 1615                                                                                |
| Q Serve(g_s), s              | 7.1                                                                               | 21.7                                                                              | 21.7                                                                              | 10.6                                                                              | 26.0                                                                              | 8.1                                                                               | 0.2                                                                                 | 9.7                                                                                 | 13.2                                                                                | 6.0                                                                                 | 15.5                                                                                | 12.5                                                                                |
| Cycle Q Clear(g_c), s        | 7.1                                                                               | 21.7                                                                              | 21.7                                                                              | 10.6                                                                              | 26.0                                                                              | 8.1                                                                               | 0.2                                                                                 | 9.7                                                                                 | 13.2                                                                                | 6.0                                                                                 | 15.5                                                                                | 12.5                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 357                                                                               | 669                                                                               | 697                                                                               | 286                                                                               | 616                                                                               | 529                                                                               | 8                                                                                   | 365                                                                                 | 313                                                                                 | 131                                                                                 | 504                                                                                 | 429                                                                                 |
| V/C Ratio(X)                 | 0.50                                                                              | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 1.46                                                                              | 0.40                                                                              | 0.52                                                                                | 0.68                                                                                | 0.88                                                                                | 1.67                                                                                | 0.79                                                                                | 0.66                                                                                |
| Avail Cap(c_a), veh/h        | 357                                                                               | 669                                                                               | 697                                                                               | 296                                                                               | 616                                                                               | 529                                                                               | 91                                                                                  | 379                                                                                 | 325                                                                                 | 131                                                                                 | 504                                                                                 | 429                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.2                                                                              | 22.5                                                                              | 22.5                                                                              | 32.6                                                                              | 26.7                                                                              | 20.7                                                                              | 39.5                                                                                | 29.7                                                                                | 31.1                                                                                | 36.7                                                                                | 27.1                                                                                | 26.0                                                                                |
| Incr Delay (d2), s/veh       | 4.9                                                                               | 10.6                                                                              | 10.2                                                                              | 21.8                                                                              | 217.9                                                                             | 2.3                                                                               | 45.2                                                                                | 4.6                                                                                 | 22.7                                                                                | 334.0                                                                               | 8.2                                                                                 | 3.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.0                                                                               | 12.7                                                                              | 13.2                                                                              | 7.0                                                                               | 50.6                                                                              | 3.9                                                                               | 0.2                                                                                 | 5.5                                                                                 | 7.8                                                                                 | 15.0                                                                                | 9.2                                                                                 | 6.0                                                                                 |
| LnGrp Delay(d),s/veh         | 33.1                                                                              | 33.1                                                                              | 32.8                                                                              | 54.4                                                                              | 244.6                                                                             | 22.9                                                                              | 84.7                                                                                | 34.3                                                                                | 53.8                                                                                | 370.7                                                                               | 35.3                                                                                | 29.9                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | F                                                                                   | C                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1294                                                                              |                                                                                   |                                                                                   | 1361                                                                              |                                                                                   |                                                                                   |                                                                                     | 528                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.0                                                                              |                                                                                   |                                                                                   | 175.5                                                                             |                                                                                   |                                                                                   |                                                                                     | 44.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.6                                                                              | 33.4                                                                              | 4.3                                                                               | 25.1                                                                              | 20.0                                                                              | 30.0                                                                              | 10.0                                                                                | 19.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.0                                                                              | 29.0                                                                              | 4.0                                                                               | 18.0                                                                              | 16.0                                                                              | 26.0                                                                              | 6.0                                                                                 | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.6                                                                              | 23.7                                                                              | 2.2                                                                               | 17.5                                                                              | 9.1                                                                               | 28.0                                                                              | 8.0                                                                                 | 15.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.7                                                                               | 0.0                                                                               | 0.4                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 100.2                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                             |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                    | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations         |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)      | 162                                                                               | 1075                                                                              | 44                                                                                | 64                                                                                | 982                                                                               | 91                                                                                | 59                                                                                | 96                                                                                | 44                                                                                 | 97                                                                                  | 59                                                                                  | 63                                                                                  |
| Future Volume (veh/h)       | 162                                                                               | 1075                                                                              | 44                                                                                | 64                                                                                | 982                                                                               | 91                                                                                | 59                                                                                | 96                                                                                | 44                                                                                 | 97                                                                                  | 59                                                                                  | 63                                                                                  |
| Number                      | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                 | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)         | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln      | 1727                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1897                                                                              | 1900                                                                              | 1900                                                                              | 1837                                                                              | 1900                                                                               | 1900                                                                                | 1808                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h        | 176                                                                               | 1168                                                                              | 48                                                                                | 70                                                                                | 1067                                                                              | 99                                                                                | 64                                                                                | 104                                                                               | 48                                                                                 | 105                                                                                 | 64                                                                                  | 68                                                                                  |
| Adj No. of Lanes            | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                  | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor            | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %        | 10                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                  | 221                                                                               | 1006                                                                              | 41                                                                                | 119                                                                               | 833                                                                               | 77                                                                                | 299                                                                               | 258                                                                               | 119                                                                                | 159                                                                                 | 87                                                                                  | 71                                                                                  |
| Arrive On Green             | 0.13                                                                              | 0.56                                                                              | 0.56                                                                              | 0.07                                                                              | 0.49                                                                              | 0.49                                                                              | 0.22                                                                              | 0.22                                                                              | 0.22                                                                               | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h             | 1645                                                                              | 1812                                                                              | 74                                                                                | 1810                                                                              | 1710                                                                              | 159                                                                               | 1278                                                                              | 1191                                                                              | 550                                                                                | 410                                                                                 | 401                                                                                 | 326                                                                                 |
| Grp Volume(v), veh/h        | 176                                                                               | 0                                                                                 | 1216                                                                              | 70                                                                                | 0                                                                                 | 1166                                                                              | 64                                                                                | 0                                                                                 | 152                                                                                | 237                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln    | 1645                                                                              | 0                                                                                 | 1887                                                                              | 1810                                                                              | 0                                                                                 | 1869                                                                              | 1278                                                                              | 0                                                                                 | 1740                                                                               | 1136                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s             | 7.7                                                                               | 0.0                                                                               | 41.0                                                                              | 2.8                                                                               | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 0.0                                                                               | 5.5                                                                                | 9.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s       | 7.7                                                                               | 0.0                                                                               | 41.0                                                                              | 2.8                                                                               | 0.0                                                                               | 36.0                                                                              | 4.3                                                                               | 0.0                                                                               | 5.5                                                                                | 15.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 0.08                                                                              | 1.00                                                                              |                                                                                   | 0.32                                                                               | 0.44                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h      | 221                                                                               | 0                                                                                 | 1048                                                                              | 119                                                                               | 0                                                                                 | 910                                                                               | 299                                                                               | 0                                                                                 | 377                                                                                | 316                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                | 0.80                                                                              | 0.00                                                                              | 1.16                                                                              | 0.59                                                                              | 0.00                                                                              | 1.28                                                                              | 0.21                                                                              | 0.00                                                                              | 0.40                                                                               | 0.75                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h       | 356                                                                               | 0                                                                                 | 1048                                                                              | 392                                                                               | 0                                                                                 | 910                                                                               | 299                                                                               | 0                                                                                 | 377                                                                                | 316                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)          | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh    | 31.0                                                                              | 0.0                                                                               | 16.4                                                                              | 33.5                                                                              | 0.0                                                                               | 19.0                                                                              | 24.4                                                                              | 0.0                                                                               | 24.9                                                                               | 29.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh      | 6.5                                                                               | 0.0                                                                               | 83.1                                                                              | 4.5                                                                               | 0.0                                                                               | 134.9                                                                             | 1.6                                                                               | 0.0                                                                               | 3.2                                                                                | 15.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln    | 8.9                                                                               | 0.0                                                                               | 45.1                                                                              | 1.5                                                                               | 0.0                                                                               | 52.6                                                                              | 1.2                                                                               | 0.0                                                                               | 3.0                                                                                | 6.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh        | 37.5                                                                              | 0.0                                                                               | 99.5                                                                              | 38.1                                                                              | 0.0                                                                               | 153.8                                                                             | 26.0                                                                              | 0.0                                                                               | 28.1                                                                               | 44.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                   | D                                                                                 |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | F                                                                                 | C                                                                                 |                                                                                   | C                                                                                  | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h         | 1392                                                                              |                                                                                   |                                                                                   | 1236                                                                              |                                                                                   |                                                                                   | 216                                                                               |                                                                                   |                                                                                    | 237                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh       | 91.7                                                                              |                                                                                   |                                                                                   | 147.3                                                                             |                                                                                   |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                    | 44.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |
| Timer                       | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s    | 8.9                                                                               | 45.0                                                                              |                                                                                   | 20.0                                                                              | 13.9                                                                              | 40.0                                                                              |                                                                                   | 20.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s     | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s | 10.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              | 16.0                                                                              | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I), s | 14.8                                                                              | 43.0                                                                              |                                                                                   | 17.4                                                                              | 9.7                                                                               | 38.0                                                                              |                                                                                   | 7.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s     | 0.1                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                   | 1.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay         | 105.9                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Traffic Volume (veh/h)       | 193                                                                               | 111                                                                               | 116                                                                               | 569                                                                               | 805                                                                               | 317                                                                               |   |      |
| Future Volume (veh/h)        | 193                                                                               | 111                                                                               | 116                                                                               | 569                                                                               | 805                                                                               | 317                                                                               |   |      |
| Number                       | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1881                                                                              | 1845                                                                              | 1810                                                                              | 1827                                                                              | 1850                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h         | 210                                                                               | 121                                                                               | 126                                                                               | 618                                                                               | 875                                                                               | 345                                                                               |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |      |
| Percent Heavy Veh, %         | 1                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 | 1                                                                                 | 1                                                                                 |   |      |
| Cap, veh/h                   | 400                                                                               | 350                                                                               | 324                                                                               | 1247                                                                              | 1103                                                                              | 433                                                                               |   |      |
| Arrive On Green              | 0.22                                                                              | 0.22                                                                              | 0.19                                                                              | 0.68                                                                              | 0.45                                                                              | 0.45                                                                              |   |      |
| Sat Flow, veh/h              | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 2560                                                                              | 969                                                                               |   |      |
| Grp Volume(v), veh/h         | 210                                                                               | 121                                                                               | 126                                                                               | 618                                                                               | 622                                                                               | 598                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1792                                                                              | 1568                                                                              | 1723                                                                              | 1827                                                                              | 1758                                                                              | 1679                                                                              |   |      |
| Q Serve(g_s), s              | 8.8                                                                               | 5.5                                                                               | 5.4                                                                               | 13.8                                                                              | 25.8                                                                              | 26.0                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 8.8                                                                               | 5.5                                                                               | 5.4                                                                               | 13.8                                                                              | 25.8                                                                              | 26.0                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.58                                                                              |   |      |
| Lane Grp Cap(c), veh/h       | 400                                                                               | 350                                                                               | 324                                                                               | 1247                                                                              | 786                                                                               | 751                                                                               |   |      |
| V/C Ratio(X)                 | 0.52                                                                              | 0.35                                                                              | 0.39                                                                              | 0.50                                                                              | 0.79                                                                              | 0.80                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 400                                                                               | 350                                                                               | 324                                                                               | 1247                                                                              | 786                                                                               | 751                                                                               |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 29.0                                                                              | 27.8                                                                              | 30.2                                                                              | 6.5                                                                               | 20.1                                                                              | 20.2                                                                              |   |      |
| Incr Delay (d2), s/veh       | 4.8                                                                               | 2.7                                                                               | 3.5                                                                               | 0.3                                                                               | 8.0                                                                               | 8.6                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 4.9                                                                               | 2.6                                                                               | 2.9                                                                               | 7.0                                                                               | 14.2                                                                              | 13.7                                                                              |   |      |
| LnGrp Delay(d),s/veh         | 33.9                                                                              | 30.4                                                                              | 33.7                                                                              | 6.8                                                                               | 28.1                                                                              | 28.8                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |      |
| Approach Vol, veh/h          | 331                                                                               |                                                                                   |                                                                                   | 744                                                                               | 1220                                                                              |                                                                                   |   |      |
| Approach Delay, s/veh        | 32.6                                                                              |                                                                                   |                                                                                   | 11.3                                                                              | 28.4                                                                              |                                                                                   |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 23.0                                                                              | 20.0                                                                              | 42.0                                                                              |                                                                                   |                                                                                   |   | 62.0 |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s  |                                                                                   | 19.0                                                                              | 16.0                                                                              | 38.0                                                                              |                                                                                   |                                                                                   |   | 58.0 |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 10.8                                                                              | 7.4                                                                               | 28.0                                                                              |                                                                                   |                                                                                   |   | 15.8 |
| Green Ext Time (p_c), s      |                                                                                   | 0.7                                                                               | 0.2                                                                               | 7.6                                                                               |                                                                                   |                                                                                   |   | 19.6 |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.5                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
4: Front Street & Metro Station Access North

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
|                                                                      |  |  |  |  |  |  |   |      |
| Movement                                                             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |   |      |
| Lane Configurations                                                  |  |                                                                                   |  |  |  |                                                                                   |   |      |
| Traffic Volume (veh/h)                                               | 14                                                                                | 19                                                                                | 14                                                                                | 661                                                                               | 783                                                                               | 17                                                                                |   |      |
| Future Volume (veh/h)                                                | 14                                                                                | 19                                                                                | 14                                                                                | 661                                                                               | 783                                                                               | 17                                                                                |   |      |
| Number                                                               | 5                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 4                                                                                 | 14                                                                                |   |      |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |   |      |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln                                               | 1112                                                                              | 1900                                                                              | 1056                                                                              | 1900                                                                              | 1850                                                                              | 1900                                                                              |   |      |
| Adj Flow Rate, veh/h                                                 | 15                                                                                | 21                                                                                | 15                                                                                | 718                                                                               | 851                                                                               | 18                                                                                |   |      |
| Adj No. of Lanes                                                     | 0                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 |   |      |
| Peak Hour Factor                                                     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |      |
| Percent Heavy Veh, %                                                 | 0                                                                                 | 0                                                                                 | 80                                                                                | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |      |
| Cap, veh/h                                                           | 13                                                                                | 19                                                                                | 376                                                                               | 1503                                                                              | 1428                                                                              | 30                                                                                |   |      |
| Arrive On Green                                                      | 0.03                                                                              | 0.03                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              |   |      |
| Sat Flow, veh/h                                                      | 402                                                                               | 563                                                                               | 360                                                                               | 1900                                                                              | 1805                                                                              | 38                                                                                |   |      |
| Grp Volume(v), veh/h                                                 | 37                                                                                | 0                                                                                 | 15                                                                                | 718                                                                               | 0                                                                                 | 869                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln                                             | 993                                                                               | 0                                                                                 | 360                                                                               | 1900                                                                              | 0                                                                                 | 1843                                                                              |   |      |
| Q Serve(g_s), s                                                      | 1.5                                                                               | 0.0                                                                               | 0.8                                                                               | 5.8                                                                               | 0.0                                                                               | 8.5                                                                               |   |      |
| Cycle Q Clear(g_c), s                                                | 1.5                                                                               | 0.0                                                                               | 9.3                                                                               | 5.8                                                                               | 0.0                                                                               | 8.5                                                                               |   |      |
| Prop In Lane                                                         | 0.41                                                                              | 0.57                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.02                                                                              |   |      |
| Lane Grp Cap(c), veh/h                                               | 33                                                                                | 0                                                                                 | 376                                                                               | 1503                                                                              | 0                                                                                 | 1458                                                                              |   |      |
| V/C Ratio(X)                                                         | 1.14                                                                              | 0.00                                                                              | 0.04                                                                              | 0.48                                                                              | 0.00                                                                              | 0.60                                                                              |   |      |
| Avail Cap(c_a), veh/h                                                | 349                                                                               | 0                                                                                 | 376                                                                               | 1503                                                                              | 0                                                                                 | 1458                                                                              |   |      |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh                                             | 22.0                                                                              | 0.0                                                                               | 3.7                                                                               | 1.6                                                                               | 0.0                                                                               | 1.9                                                                               |   |      |
| Incr Delay (d2), s/veh                                               | 114.2                                                                             | 0.0                                                                               | 0.2                                                                               | 1.1                                                                               | 0.0                                                                               | 1.8                                                                               |   |      |
| Initial Q Delay(d3),s/veh                                            | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln                                             | 1.4                                                                               | 0.0                                                                               | 0.1                                                                               | 3.2                                                                               | 0.0                                                                               | 4.8                                                                               |   |      |
| LnGrp Delay(d),s/veh                                                 | 142.6                                                                             | 0.0                                                                               | 3.9                                                                               | 2.7                                                                               | 0.0                                                                               | 3.7                                                                               |   |      |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |   |      |
| Approach Vol, veh/h                                                  | 37                                                                                |                                                                                   |                                                                                   | 733                                                                               | 869                                                                               |                                                                                   |   |      |
| Approach Delay, s/veh                                                | 142.6                                                                             |                                                                                   |                                                                                   | 2.7                                                                               | 3.7                                                                               |                                                                                   |   |      |
| Approach LOS                                                         | F                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |      |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |   | 8    |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 5.5                                                                               |                                                                                   | 40.0                                                                              |                                                                                   |                                                                                   |   | 40.0 |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   |   | 4.0  |
| Max Green Setting (Gmax), s                                          |                                                                                   | 16.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   |   | 36.0 |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   | 3.5                                                                               |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   |   | 11.3 |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   |   | 13.9 |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |

Santa Cruz DRP Study  
5: Pacific Avenue & Metro Station Access

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

| Intersection             |                                                                                   |          |                                                                                   |      |        |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.7                                                                               |          |                                                                                   |      |        |                                                                                     |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL    | SBT                                                                                 |
| Lane Configurations      |  |          |  |      |        |  |
| Traffic Vol, veh/h       | 9                                                                                 | 11       | 93                                                                                | 4    | 13     | 61                                                                                  |
| Future Vol, veh/h        | 9                                                                                 | 11       | 93                                                                                | 4    | 13     | 61                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0      | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free   | Free                                                                                |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -      | None                                                                                |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -      | -                                                                                   |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -      | 0                                                                                   |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92   | 92     | 92                                                                                  |
| Heavy Vehicles, %        | 100                                                                               | 90       | 4                                                                                 | 100  | 90     | 1                                                                                   |
| Mvmt Flow                | 10                                                                                | 12       | 101                                                                               | 4    | 14     | 66                                                                                  |
| Major/Minor              | Minor1                                                                            |          | Major1                                                                            |      | Major2 |                                                                                     |
| Conflicting Flow All     | 198                                                                               | 103      | 0                                                                                 | 0    | 105    | 0                                                                                   |
| Stage 1                  | 103                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 95                                                                                | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy            | 7.4                                                                               | 7.1      | -                                                                                 | -    | 5      | -                                                                                   |
| Critical Hdwy Stg 1      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Critical Hdwy Stg 2      | 6.4                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Follow-up Hdwy           | 4.4                                                                               | 4.11     | -                                                                                 | -    | 3.01   | -                                                                                   |
| Pot Cap-1 Maneuver       | 613                                                                               | 758      | -                                                                                 | -    | 1080   | -                                                                                   |
| Stage 1                  | 725                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 732                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |        | -                                                                                   |
| Mov Cap-1 Maneuver       | 605                                                                               | 758      | -                                                                                 | -    | 1080   | -                                                                                   |
| Mov Cap-2 Maneuver       | 605                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 1                  | 725                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Stage 2                  | 722                                                                               | -        | -                                                                                 | -    | -      | -                                                                                   |
| Approach                 | WB                                                                                |          | NB                                                                                |      | SB     |                                                                                     |
| HCM Control Delay, s     | 10.5                                                                              |          | 0                                                                                 |      | 1.5    |                                                                                     |
| HCM LOS                  | B                                                                                 |          |                                                                                   |      |        |                                                                                     |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |        |                                                                                     |
| Capacity (veh/h)         | -                                                                                 | - 681    | 1080                                                                              | -    |        |                                                                                     |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.032  | 0.013                                                                             | -    |        |                                                                                     |
| HCM Control Delay (s)    | -                                                                                 | - 10.5   | 8.4                                                                               | 0    |        |                                                                                     |
| HCM Lane LOS             | -                                                                                 | - B      | A                                                                                 | A    |        |                                                                                     |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |        |                                                                                     |

| Intersection               |       |       |       |       |      |      |      |      |      |      |      |      |
|----------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh  | 7.7   |       |       |       |      |      |      |      |      |      |      |      |
| Intersection LOS           | A     |       |       |       |      |      |      |      |      |      |      |      |
|                            |       |       |       |       |      |      |      |      |      |      |      |      |
| Movement                   | EBU   | EBL   | EBT   | EBR   | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Lane Configurations        |       |       | ↔     |       |      |      | ↔    |      |      |      | ↔    |      |
| Traffic Vol, veh/h         | 0     | 10    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 100  | 0    |
| Future Vol, veh/h          | 0     | 10    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 100  | 0    |
| Peak Hour Factor           | 0.92  | 0.92  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, %          | 2     | 0     | 0     | 0     | 2    | 0    | 0    | 0    | 2    | 0    | 7    | 0    |
| Mvmt Flow                  | 0     | 11    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 109  | 0    |
| Number of Lanes            | 0     | 0     | 1     | 0     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |
| Approach                   | EB    |       |       |       | WB   |      |      |      | NB   |      |      |      |
| Opposing Approach          | WB    |       |       |       | EB   |      |      |      | SB   |      |      |      |
| Opposing Lanes             | 1     |       |       |       | 1    |      |      |      | 1    |      |      |      |
| Conflicting Approach Left  | SB    |       |       |       | NB   |      |      |      | EB   |      |      |      |
| Conflicting Lanes Left     | 1     |       |       |       | 1    |      |      |      | 1    |      |      |      |
| Conflicting Approach Right | NB    |       |       |       | SB   |      |      |      | WB   |      |      |      |
| Conflicting Lanes Right    | 1     |       |       |       | 1    |      |      |      | 1    |      |      |      |
| HCM Control Delay          | 7.6   |       |       |       | 0    |      |      |      | 7.7  |      |      |      |
| HCM LOS                    | A     |       |       |       | -    |      |      |      | A    |      |      |      |
|                            |       |       |       |       |      |      |      |      |      |      |      |      |
| Lane                       | NBLn1 | EBLn1 | WBLn1 | SBLn1 |      |      |      |      |      |      |      |      |
| Vol Left, %                | 0%    | 100%  | 0%    | 0%    |      |      |      |      |      |      |      |      |
| Vol Thru, %                | 100%  | 0%    | 100%  | 75%   |      |      |      |      |      |      |      |      |
| Vol Right, %               | 0%    | 0%    | 0%    | 25%   |      |      |      |      |      |      |      |      |
| Sign Control               | Stop  | Stop  | Stop  | Stop  |      |      |      |      |      |      |      |      |
| Traffic Vol by Lane        | 100   | 10    | 0     | 73    |      |      |      |      |      |      |      |      |
| LT Vol                     | 0     | 10    | 0     | 0     |      |      |      |      |      |      |      |      |
| Through Vol                | 100   | 0     | 0     | 55    |      |      |      |      |      |      |      |      |
| RT Vol                     | 0     | 0     | 0     | 18    |      |      |      |      |      |      |      |      |
| Lane Flow Rate             | 109   | 11    | 0     | 79    |      |      |      |      |      |      |      |      |
| Geometry Grp               | 1     | 1     | 1     | 1     |      |      |      |      |      |      |      |      |
| Degree of Util (X)         | 0.124 | 0.013 | 0     | 0.091 |      |      |      |      |      |      |      |      |
| Departure Headway (Hd)     | 4.098 | 4.424 | 4.234 | 4.142 |      |      |      |      |      |      |      |      |
| Convergence, Y/N           | Yes   | Yes   | Yes   | Yes   |      |      |      |      |      |      |      |      |
| Cap                        | 875   | 798   | 0     | 864   |      |      |      |      |      |      |      |      |
| Service Time               | 2.121 | 2.513 | 2.326 | 2.171 |      |      |      |      |      |      |      |      |
| HCM Lane V/C Ratio         | 0.125 | 0.014 | 0     | 0.091 |      |      |      |      |      |      |      |      |
| HCM Control Delay          | 7.7   | 7.6   | 7.3   | 7.6   |      |      |      |      |      |      |      |      |
| HCM Lane LOS               | A     | A     | N     | A     |      |      |      |      |      |      |      |      |
| HCM 95th-tile Q            | 0.4   | 0     | 0     | 0.3   |      |      |      |      |      |      |      |      |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement            | SBU  | SBL  | SBT                                                                               | SBR  |
|---------------------|------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations |      |      |  |      |
| Traffic Vol, veh/h  | 0    | 0    | 55                                                                                | 18   |
| Future Vol, veh/h   | 0    | 0    | 55                                                                                | 18   |
| Peak Hour Factor    | 0.92 | 0.92 | 0.92                                                                              | 0.92 |
| Heavy Vehicles, %   | 2    | 0    | 17                                                                                | 0    |
| Mvmt Flow           | 0    | 0    | 60                                                                                | 20   |
| Number of Lanes     | 0    | 0    | 1                                                                                 | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.6 |
| HCM LOS                    | A   |

# APPENDIX F

Santa Cruz DRP Study

Cumulative + Project PM

7: Pacific Street & Front Street & Mission Street/Water Street

PM Peak

|                                   |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | WBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |                                                                                    |                                                                                     |  |  |
| Traffic Volume (vph)              | 263                                                                               | 1133                                                                              | 165                                                                               | 0                                                                                 | 166                                                                               | 893                                                                               | 39                                                                                 | 64                                                                                  | 371                                                                                 | 221                                                                                 |
| Future Volume (vph)               | 263                                                                               | 1133                                                                              | 165                                                                               | 0                                                                                 | 166                                                                               | 893                                                                               | 39                                                                                 | 64                                                                                  | 371                                                                                 | 221                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                    |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.95                                                                              |                                                                                    |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                    |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                    |                                                                                     | 0.99                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1787                                                                              | 3574                                                                              | 1599                                                                              |                                                                                   | 1770                                                                              | 3553                                                                              |                                                                                    |                                                                                     | 1826                                                                                | 1599                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                    |                                                                                     | 0.99                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1787                                                                              | 3574                                                                              | 1599                                                                              |                                                                                   | 1770                                                                              | 3553                                                                              |                                                                                    |                                                                                     | 1826                                                                                | 1599                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 286                                                                               | 1232                                                                              | 179                                                                               | 0                                                                                 | 180                                                                               | 971                                                                               | 42                                                                                 | 70                                                                                  | 403                                                                                 | 240                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 75                                                                                  |
| Lane Group Flow (vph)             | 286                                                                               | 1232                                                                              | 179                                                                               | 0                                                                                 | 180                                                                               | 1010                                                                              | 0                                                                                  | 0                                                                                   | 473                                                                                 | 165                                                                                 |
| Heavy Vehicles (%)                | 1%                                                                                | 1%                                                                                | 1%                                                                                | 1%                                                                                | 2%                                                                                | 1%                                                                                | 0%                                                                                 | 5%                                                                                  | 3%                                                                                  | 1%                                                                                  |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                    | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                    |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     | 8                                                                                   |
| Actuated Green, G (s)             | 16.9                                                                              | 37.5                                                                              | 37.5                                                                              |                                                                                   | 11.5                                                                              | 32.1                                                                              |                                                                                    |                                                                                     | 28.0                                                                                | 28.0                                                                                |
| Effective Green, g (s)            | 16.9                                                                              | 37.5                                                                              | 37.5                                                                              |                                                                                   | 11.5                                                                              | 32.1                                                                              |                                                                                    |                                                                                     | 28.0                                                                                | 28.0                                                                                |
| Actuated g/C Ratio                | 0.19                                                                              | 0.42                                                                              | 0.42                                                                              |                                                                                   | 0.13                                                                              | 0.36                                                                              |                                                                                    |                                                                                     | 0.31                                                                                | 0.31                                                                                |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                    |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                    |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 339                                                                               | 1505                                                                              | 673                                                                               |                                                                                   | 228                                                                               | 1281                                                                              |                                                                                    |                                                                                     | 574                                                                                 | 503                                                                                 |
| v/s Ratio Prot                    | c0.16                                                                             | c0.34                                                                             |                                                                                   |                                                                                   | 0.10                                                                              | 0.28                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.26                                                                                | 0.10                                                                                |
| v/c Ratio                         | 0.84                                                                              | 0.82                                                                              | 0.27                                                                              |                                                                                   | 0.79                                                                              | 0.79                                                                              |                                                                                    |                                                                                     | 0.82                                                                                | 0.33                                                                                |
| Uniform Delay, d1                 | 34.8                                                                              | 22.7                                                                              | 16.8                                                                              |                                                                                   | 37.6                                                                              | 25.4                                                                              |                                                                                    |                                                                                     | 28.2                                                                                | 23.3                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 17.1                                                                              | 3.6                                                                               | 0.2                                                                               |                                                                                   | 16.4                                                                              | 5.0                                                                               |                                                                                    |                                                                                     | 12.7                                                                                | 1.7                                                                                 |
| Delay (s)                         | 51.9                                                                              | 26.3                                                                              | 17.0                                                                              |                                                                                   | 54.0                                                                              | 30.4                                                                              |                                                                                    |                                                                                     | 40.9                                                                                | 25.1                                                                                |
| Level of Service                  | D                                                                                 | C                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | C                                                                                 |                                                                                    |                                                                                     | D                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 29.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                    |                                                                                     | 35.6                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.85                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 89.0                                                                              |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    |                                                                                     | 12.0                                                                                |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 73.6%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |                                                                                   |  |                                                                                   |  |  |  |                                                                                   |  |                                                                                    |  |  |                                                                                     |
| Traffic Volume (veh/h)                                               | 70                                                                                | 262                                                                               | 44                                                                                | 498                                                                               | 314                                                                               | 79                                                                                | 46                                                                                | 523                                                                               | 243                                                                                | 193                                                                                 | 649                                                                                 | 75                                                                                  |
| Future Volume (veh/h)                                                | 70                                                                                | 262                                                                               | 44                                                                                | 498                                                                               | 314                                                                               | 79                                                                                | 46                                                                                | 523                                                                               | 243                                                                                | 193                                                                                 | 649                                                                                 | 75                                                                                  |
| Number                                                               | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                 | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1900                                                                              | 1848                                                                              | 1900                                                                              | 1900                                                                              | 1858                                                                              | 1900                                                                              | 1900                                                                              | 1830                                                                              | 1900                                                                               | 1881                                                                                | 1819                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                 | 76                                                                                | 285                                                                               | 48                                                                                | 441                                                                               | 481                                                                               | 0                                                                                 | 50                                                                                | 568                                                                               | 264                                                                                | 210                                                                                 | 705                                                                                 | 82                                                                                  |
| Adj No. of Lanes                                                     | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                                 | 4                                                                                 | 4                                                                                 | 4                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 1                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                                                           | 91                                                                                | 357                                                                               | 63                                                                                | 462                                                                               | 474                                                                               | 412                                                                               | 52                                                                                | 622                                                                               | 449                                                                                | 256                                                                                 | 768                                                                                 | 89                                                                                  |
| Arrive On Green                                                      | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.26                                                                              | 0.26                                                                              | 0.00                                                                              | 0.48                                                                              | 0.48                                                                              | 0.48                                                                               | 0.48                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h                                                      | 640                                                                               | 2508                                                                              | 440                                                                               | 1810                                                                              | 1858                                                                              | 1615                                                                              | 24                                                                                | 1296                                                                              | 936                                                                                | 663                                                                                 | 1600                                                                                | 186                                                                                 |
| Grp Volume(v), veh/h                                                 | 216                                                                               | 0                                                                                 | 193                                                                               | 441                                                                               | 481                                                                               | 0                                                                                 | 459                                                                               | 0                                                                                 | 423                                                                                | 210                                                                                 | 0                                                                                   | 787                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             | 1817                                                                              | 0                                                                                 | 1771                                                                              | 1810                                                                              | 1858                                                                              | 1615                                                                              | 756                                                                               | 0                                                                                 | 1500                                                                               | 663                                                                                 | 0                                                                                   | 1786                                                                                |
| Q Serve(g_s), s                                                      | 11.3                                                                              | 0.0                                                                               | 10.3                                                                              | 23.5                                                                              | 25.0                                                                              | 0.0                                                                               | 6.8                                                                               | 0.0                                                                               | 20.0                                                                               | 27.0                                                                                | 0.0                                                                                 | 40.2                                                                                |
| Cycle Q Clear(g_c), s                                                | 11.3                                                                              | 0.0                                                                               | 10.3                                                                              | 23.5                                                                              | 25.0                                                                              | 0.0                                                                               | 47.0                                                                              | 0.0                                                                               | 20.0                                                                               | 47.0                                                                                | 0.0                                                                                 | 40.2                                                                                |
| Prop In Lane                                                         | 0.35                                                                              |                                                                                   | 0.25                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 0.11                                                                              |                                                                                   | 0.62                                                                               | 1.00                                                                                |                                                                                     | 0.10                                                                                |
| Lane Grp Cap(c), veh/h                                               | 259                                                                               | 0                                                                                 | 252                                                                               | 462                                                                               | 474                                                                               | 412                                                                               | 403                                                                               | 0                                                                                 | 720                                                                                | 256                                                                                 | 0                                                                                   | 857                                                                                 |
| V/C Ratio(X)                                                         | 0.83                                                                              | 0.00                                                                              | 0.77                                                                              | 0.95                                                                              | 1.01                                                                              | 0.00                                                                              | 1.14                                                                              | 0.00                                                                              | 0.59                                                                               | 0.82                                                                                | 0.00                                                                                | 0.92                                                                                |
| Avail Cap(c_a), veh/h                                                | 297                                                                               | 0                                                                                 | 289                                                                               | 462                                                                               | 474                                                                               | 412                                                                               | 403                                                                               | 0                                                                                 | 720                                                                                | 256                                                                                 | 0                                                                                   | 857                                                                                 |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 40.9                                                                              | 0.0                                                                               | 40.4                                                                              | 35.9                                                                              | 36.5                                                                              | 0.0                                                                               | 22.7                                                                              | 0.0                                                                               | 18.5                                                                               | 37.2                                                                                | 0.0                                                                                 | 23.7                                                                                |
| Incr Delay (d2), s/veh                                               | 16.4                                                                              | 0.0                                                                               | 10.2                                                                              | 32.0                                                                              | 45.0                                                                              | 0.0                                                                               | 87.9                                                                              | 0.0                                                                               | 1.3                                                                                | 18.6                                                                                | 0.0                                                                                 | 14.7                                                                                |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 6.9                                                                               | 0.0                                                                               | 5.8                                                                               | 15.9                                                                              | 18.7                                                                              | 0.0                                                                               | 20.7                                                                              | 0.0                                                                               | 8.5                                                                                | 7.0                                                                                 | 0.0                                                                                 | 23.2                                                                                |
| LnGrp Delay(d),s/veh                                                 | 57.3                                                                              | 0.0                                                                               | 50.6                                                                              | 67.9                                                                              | 81.5                                                                              | 0.0                                                                               | 110.5                                                                             | 0.0                                                                               | 19.7                                                                               | 55.8                                                                                | 0.0                                                                                 | 38.4                                                                                |
| LnGrp LOS                                                            | E                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | F                                                                                 |                                                                                   | F                                                                                 |                                                                                   | B                                                                                  | E                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h                                                  | 409                                                                               |                                                                                   |                                                                                   | 922                                                                               |                                                                                   |                                                                                   | 882                                                                               |                                                                                   |                                                                                    | 997                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 54.1                                                                              |                                                                                   |                                                                                   | 75.0                                                                              |                                                                                   |                                                                                   | 67.0                                                                              |                                                                                   |                                                                                    | 42.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                         | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             | 18.0                                                                              |                                                                                   |                                                                                   | 51.0                                                                              |                                                                                   |                                                                                   | 29.0                                                                              |                                                                                   |                                                                                    | 51.0                                                                                |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          | 16.0                                                                              |                                                                                   |                                                                                   | 47.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                    | 47.0                                                                                |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         | 13.3                                                                              |                                                                                   |                                                                                   | 49.0                                                                              |                                                                                   |                                                                                   | 27.0                                                                              |                                                                                   |                                                                                    | 49.0                                                                                |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              | 0.6                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 59.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

**Intersection**

Intersection Delay, s/veh 8.3

Intersection LOS A

| Movement            | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  | SBU  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      |      | ↔    |      |      |      | ↔    |      |      |      | ↔    |      |      |      |      |      |
| Traffic Vol, veh/h  | 0    | 0    | 152  | 33   | 0    | 35   | 60   | 27   | 0    | 2    | 44   | 26   | 0    | 0    | 0    | 0    |
| Future Vol, veh/h   | 0    | 0    | 152  | 33   | 0    | 35   | 60   | 27   | 0    | 2    | 44   | 26   | 0    | 0    | 0    | 0    |
| Peak Hour Factor    | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, %   | 2    | 0    | 0    | 2    | 2    | 22   | 2    | 14   | 2    | 0    | 1    | 9    | 2    | 0    | 0    | 0    |
| Mvmt Flow           | 0    | 0    | 165  | 36   | 0    | 38   | 65   | 29   | 0    | 2    | 48   | 28   | 0    | 0    | 0    | 0    |
| Number of Lanes     | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  |     |
| Opposing Lanes             | 1   | 1   | 0   |
| Conflicting Approach Left  |     | NB  | EB  |
| Conflicting Lanes Left     | 0   | 1   | 1   |
| Conflicting Approach Right | NB  |     | WB  |
| Conflicting Lanes Right    | 1   | 0   | 1   |
| HCM Control Delay          | 8.3 | 8.5 | 7.9 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, %            | 3%    | 0%    | 29%   |
| Vol Thru, %            | 61%   | 82%   | 49%   |
| Vol Right, %           | 36%   | 18%   | 22%   |
| Sign Control           | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 72    | 185   | 122   |
| LT Vol                 | 2     | 0     | 35    |
| Through Vol            | 44    | 152   | 60    |
| RT Vol                 | 26    | 33    | 27    |
| Lane Flow Rate         | 78    | 201   | 133   |
| Geometry Grp           | 1     | 1     | 1     |
| Degree of Util (X)     | 0.096 | 0.225 | 0.165 |
| Departure Headway (Hd) | 4.424 | 4.033 | 4.492 |
| Convergence, Y/N       | Yes   | Yes   | Yes   |
| Cap                    | 815   | 875   | 786   |
| Service Time           | 2.424 | 2.126 | 2.586 |
| HCM Lane V/C Ratio     | 0.096 | 0.23  | 0.169 |
| HCM Control Delay      | 7.9   | 8.3   | 8.5   |
| HCM Lane LOS           | A     | A     | A     |
| HCM 95th-tile Q        | 0.3   | 0.9   | 0.6   |

| Intersection             |        |                                                                                   |                                                                                   |      |      |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|
| Int Delay, s/veh         | 4.3    |                                                                                   |                                                                                   |      |      |      |
| Movement                 | WBL    | WBR                                                                               | NBT                                                                               | NBR  | SBL  | SBT  |
| Lane Configurations      |        |  |  |      |      |      |
| Traffic Vol, veh/h       | 0      | 128                                                                               | 56                                                                                | 96   | 0    | 0    |
| Future Vol, veh/h        | 0      | 128                                                                               | 56                                                                                | 96   | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free | Free | Free |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -    | None |
| Storage Length           | -      | 0                                                                                 | -                                                                                 | -    | -    | -    |
| Veh in Median Storage, # | 0      | -                                                                                 | 0                                                                                 | -    | -    | -    |
| Grade, %                 | 0      | -                                                                                 | 0                                                                                 | -    | -    | 0    |
| Peak Hour Factor         | 92     | 92                                                                                | 92                                                                                | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 2                                                                                 | 1    | 0    | 0    |
| Mvmt Flow                | 0      | 139                                                                               | 61                                                                                | 104  | 0    | 0    |
| Major/Minor              | Minor1 | Major1                                                                            |                                                                                   |      |      |      |
| Conflicting Flow All     | -      | 113                                                                               | 0                                                                                 | 0    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy            | -      | 6.2                                                                               | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Follow-up Hdwy           | -      | 3.3                                                                               | -                                                                                 | -    |      |      |
| Pot Cap-1 Maneuver       | 0      | 945                                                                               | -                                                                                 | -    |      |      |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -    |      |      |
| Platoon blocked, %       |        |                                                                                   | -                                                                                 | -    |      |      |
| Mov Cap-1 Maneuver       | -      | 945                                                                               | -                                                                                 | -    |      |      |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    |      |      |
| Approach                 | WB     | NB                                                                                |                                                                                   |      |      |      |
| HCM Control Delay, s     | 9.5    | 0                                                                                 |                                                                                   |      |      |      |
| HCM LOS                  | A      |                                                                                   |                                                                                   |      |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBRWBLn1                                                                          |                                                                                   |      |      |      |
| Capacity (veh/h)         | -      | -                                                                                 | 945                                                                               |      |      |      |
| HCM Lane V/C Ratio       | -      | -                                                                                 | 0.147                                                                             |      |      |      |
| HCM Control Delay (s)    | -      | -                                                                                 | 9.5                                                                               |      |      |      |
| HCM Lane LOS             | -      | -                                                                                 | A                                                                                 |      |      |      |
| HCM 95th %tile Q(veh)    | -      | -                                                                                 | 0.5                                                                               |      |      |      |

Santa Cruz DRP Study  
11: Ocean Street & Water Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 495                                                                               | 1578                                                                              | 162                                                                               | 168                                                                               | 1008                                                                              | 339                                                                               | 203                                                                                | 1359                                                                                | 96                                                                                  | 522                                                                                 | 1448                                                                                | 399                                                                                 |
| Future Volume (veh/h)        | 495                                                                               | 1578                                                                              | 162                                                                               | 168                                                                               | 1008                                                                              | 339                                                                               | 203                                                                                | 1359                                                                                | 96                                                                                  | 522                                                                                 | 1448                                                                                | 399                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1881                                                                                | 1881                                                                                | 1881                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 538                                                                               | 1715                                                                              | 176                                                                               | 183                                                                               | 1096                                                                              | 0                                                                                 | 221                                                                                | 1477                                                                                | 104                                                                                 | 567                                                                                 | 1574                                                                                | 0                                                                                   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 344                                                                               | 1175                                                                              | 119                                                                               | 121                                                                               | 1162                                                                              | 525                                                                               | 136                                                                                | 953                                                                                 | 426                                                                                 | 314                                                                                 | 1324                                                                                | 581                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.36                                                                              | 0.36                                                                              | 0.07                                                                              | 0.32                                                                              | 0.00                                                                              | 0.08                                                                               | 0.27                                                                                | 0.27                                                                                | 0.17                                                                                | 0.37                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3278                                                                              | 331                                                                               | 1810                                                                              | 3574                                                                              | 1615                                                                              | 1810                                                                               | 3574                                                                                | 1599                                                                                | 1792                                                                                | 3610                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 538                                                                               | 923                                                                               | 968                                                                               | 183                                                                               | 1096                                                                              | 0                                                                                 | 221                                                                                | 1477                                                                                | 104                                                                                 | 567                                                                                 | 1574                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1787                                                                              | 1823                                                                              | 1810                                                                              | 1787                                                                              | 1615                                                                              | 1810                                                                               | 1787                                                                                | 1599                                                                                | 1792                                                                                | 1805                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 12.0                                                                              | 43.0                                                                              | 43.0                                                                              | 8.0                                                                               | 35.8                                                                              | 0.0                                                                               | 9.0                                                                                | 32.0                                                                                | 6.1                                                                                 | 21.0                                                                                | 44.0                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 12.0                                                                              | 43.0                                                                              | 43.0                                                                              | 8.0                                                                               | 35.8                                                                              | 0.0                                                                               | 9.0                                                                                | 32.0                                                                                | 6.1                                                                                 | 21.0                                                                                | 44.0                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 344                                                                               | 640                                                                               | 653                                                                               | 121                                                                               | 1162                                                                              | 525                                                                               | 136                                                                                | 953                                                                                 | 426                                                                                 | 314                                                                                 | 1324                                                                                | 581                                                                                 |
| V/C Ratio(X)                 | 1.56                                                                              | 1.44                                                                              | 1.48                                                                              | 1.52                                                                              | 0.94                                                                              | 0.00                                                                              | 1.63                                                                               | 1.55                                                                                | 0.24                                                                                | 1.81                                                                                | 1.19                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 344                                                                               | 640                                                                               | 653                                                                               | 121                                                                               | 1162                                                                              | 525                                                                               | 136                                                                                | 953                                                                                 | 426                                                                                 | 314                                                                                 | 1324                                                                                | 581                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 54.0                                                                              | 38.5                                                                              | 38.5                                                                              | 56.0                                                                              | 39.4                                                                              | 0.0                                                                               | 55.5                                                                               | 44.0                                                                                | 34.5                                                                                | 49.5                                                                                | 38.0                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 267.2                                                                             | 207.3                                                                             | 225.2                                                                             | 270.3                                                                             | 14.9                                                                              | 0.0                                                                               | 313.8                                                                              | 252.5                                                                               | 0.3                                                                                 | 376.2                                                                               | 92.9                                                                                | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 18.5                                                                              | 58.0                                                                              | 62.4                                                                              | 13.0                                                                              | 20.1                                                                              | 0.0                                                                               | 16.3                                                                               | 49.2                                                                                | 2.8                                                                                 | 43.1                                                                                | 39.0                                                                                | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 321.2                                                                             | 245.8                                                                             | 263.7                                                                             | 326.3                                                                             | 54.3                                                                              | 0.0                                                                               | 369.3                                                                              | 296.5                                                                               | 34.8                                                                                | 425.7                                                                               | 130.9                                                                               | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | D                                                                                 |                                                                                   | F                                                                                  | F                                                                                   | C                                                                                   | F                                                                                   | F                                                                                   |                                                                                     |
| Approach Vol, veh/h          | 2429                                                                              |                                                                                   |                                                                                   | 1279                                                                              |                                                                                   |                                                                                   |                                                                                    | 1802                                                                                |                                                                                     |                                                                                     | 2141                                                                                |                                                                                     |
| Approach Delay, s/veh        | 269.6                                                                             |                                                                                   |                                                                                   | 93.2                                                                              |                                                                                   |                                                                                   |                                                                                    | 290.4                                                                               |                                                                                     |                                                                                     | 209.0                                                                               |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.0                                                                              | 47.0                                                                              | 13.0                                                                              | 48.0                                                                              | 16.0                                                                              | 43.0                                                                              | 25.0                                                                               | 36.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.0                                                                               | 43.0                                                                              | 9.0                                                                               | 44.0                                                                              | 12.0                                                                              | 39.0                                                                              | 21.0                                                                               | 32.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.0                                                                              | 45.0                                                                              | 11.0                                                                              | 46.0                                                                              | 14.0                                                                              | 37.8                                                                              | 23.0                                                                               | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 228.1                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                              |  |  |  |  |  |  |  |  |    |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 490                                                                               | 2350                                                                              | 86                                                                                | 561                                                                               | 1862                                                                              | 693                                                                               | 99                                                                                | 454                                                                               | 726                                                                                 | 1109                                                                                | 545                                                                                 | 571                                                                                 |
| Future Volume (veh/h)        | 490                                                                               | 2350                                                                              | 86                                                                                | 561                                                                               | 1862                                                                              | 693                                                                               | 99                                                                                | 454                                                                               | 726                                                                                 | 1109                                                                                | 545                                                                                 | 571                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1881                                                                              | 1846                                                                              | 1900                                                                              | 1845                                                                              | 1863                                                                              | 1810                                                                              | 1881                                                                              | 1845                                                                              | 1881                                                                                | 1863                                                                                | 1845                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 533                                                                               | 2554                                                                              | 0                                                                                 | 610                                                                               | 2024                                                                              | 0                                                                                 | 108                                                                               | 493                                                                               | 789                                                                                 | 1205                                                                                | 592                                                                                 | 621                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 2                                                                                 | 5                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                   | 2                                                                                   | 3                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 340                                                                               | 1839                                                                              | 0                                                                                 | 392                                                                               | 1475                                                                              | 446                                                                               | 349                                                                               | 360                                                                               | 549                                                                                 | 843                                                                                 | 452                                                                                 | 388                                                                                 |
| Arrive On Green              | 0.19                                                                              | 0.37                                                                              | 0.00                                                                              | 0.12                                                                              | 0.29                                                                              | 0.00                                                                              | 0.19                                                                              | 0.19                                                                              | 0.19                                                                                | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                |
| Sat Flow, veh/h              | 1792                                                                              | 5205                                                                              | 0                                                                                 | 3408                                                                              | 5085                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 2814                                                                                | 3442                                                                                | 1845                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 533                                                                               | 2554                                                                              | 0                                                                                 | 610                                                                               | 2024                                                                              | 0                                                                                 | 108                                                                               | 493                                                                               | 789                                                                                 | 1205                                                                                | 592                                                                                 | 621                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1792                                                                              | 1680                                                                              | 0                                                                                 | 1704                                                                              | 1695                                                                              | 1538                                                                              | 1792                                                                              | 1845                                                                              | 1407                                                                                | 1721                                                                                | 1845                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 38.0                                                                              | 73.0                                                                              | 0.0                                                                               | 23.0                                                                              | 58.0                                                                              | 0.0                                                                               | 10.3                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| Cycle Q Clear(g_c), s        | 38.0                                                                              | 73.0                                                                              | 0.0                                                                               | 23.0                                                                              | 58.0                                                                              | 0.0                                                                               | 10.3                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 340                                                                               | 1839                                                                              | 0                                                                                 | 392                                                                               | 1475                                                                              | 446                                                                               | 349                                                                               | 360                                                                               | 549                                                                                 | 843                                                                                 | 452                                                                                 | 388                                                                                 |
| V/C Ratio(X)                 | 1.57                                                                              | 1.39                                                                              | 0.00                                                                              | 1.56                                                                              | 1.37                                                                              | 0.00                                                                              | 0.31                                                                              | 1.37                                                                              | 1.44                                                                                | 1.43                                                                                | 1.31                                                                                | 1.60                                                                                |
| Avail Cap(c_a), veh/h        | 340                                                                               | 1839                                                                              | 0                                                                                 | 392                                                                               | 1475                                                                              | 446                                                                               | 349                                                                               | 360                                                                               | 549                                                                                 | 843                                                                                 | 452                                                                                 | 388                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 81.0                                                                              | 63.5                                                                              | 0.0                                                                               | 88.5                                                                              | 71.0                                                                              | 0.0                                                                               | 69.0                                                                              | 80.5                                                                              | 80.5                                                                                | 75.5                                                                                | 75.5                                                                                | 75.5                                                                                |
| Incr Delay (d2), s/veh       | 268.5                                                                             | 178.3                                                                             | 0.0                                                                               | 262.6                                                                             | 172.0                                                                             | 0.0                                                                               | 2.3                                                                               | 183.6                                                                             | 207.2                                                                               | 199.9                                                                               | 154.6                                                                               | 282.2                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 44.2                                                                              | 64.3                                                                              | 0.0                                                                               | 25.1                                                                              | 50.7                                                                              | 0.0                                                                               | 5.4                                                                               | 38.2                                                                              | 31.0                                                                                | 46.7                                                                                | 44.4                                                                                | 51.9                                                                                |
| LnGrp Delay(d),s/veh         | 349.5                                                                             | 241.8                                                                             | 0.0                                                                               | 351.1                                                                             | 243.0                                                                             | 0.0                                                                               | 71.2                                                                              | 264.1                                                                             | 287.7                                                                               | 275.4                                                                               | 230.1                                                                               | 357.7                                                                               |
| LnGrp LOS                    | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | F                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 3087                                                                              |                                                                                   |                                                                                   | 2634                                                                              |                                                                                   |                                                                                   | 1390                                                                              |                                                                                   |                                                                                     | 2418                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 260.4                                                                             |                                                                                   |                                                                                   | 268.0                                                                             |                                                                                   |                                                                                   | 262.5                                                                             |                                                                                   |                                                                                     | 285.5                                                                               |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 27.0                                                                              | 77.0                                                                              |                                                                                   | 43.0                                                                              | 42.0                                                                              | 62.0                                                                              |                                                                                   | 53.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 23.0                                                                              | 73.0                                                                              |                                                                                   | 39.0                                                                              | 38.0                                                                              | 58.0                                                                              |                                                                                   | 49.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+Tb), s | 25.0                                                                              | 75.0                                                                              |                                                                                   | 41.0                                                                              | 40.0                                                                              | 60.0                                                                              |                                                                                   | 51.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 269.2                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                  |  |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                    |  |  |  |
| Traffic Volume (veh/h)                                               | 2436                                                                              | 1060                                                                              | 42                                                                                | 33                                                                                | 849                                                                               | 93                                                                                | 138                                                                               | 332                                                                               | 46                                                                                 | 71                                                                                  | 497                                                                                 | 1822                                                                                |
| Future Volume (veh/h)                                                | 2436                                                                              | 1060                                                                              | 42                                                                                | 33                                                                                | 849                                                                               | 93                                                                                | 138                                                                               | 332                                                                               | 46                                                                                 | 71                                                                                  | 497                                                                                 | 1822                                                                                |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                 | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1881                                                                              | 1882                                                                              | 1900                                                                              | 1900                                                                              | 1852                                                                              | 1900                                                                              | 1881                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 | 2648                                                                              | 1152                                                                              | 46                                                                                | 36                                                                                | 923                                                                               | 0                                                                                 | 150                                                                               | 361                                                                               | 50                                                                                 | 77                                                                                  | 540                                                                                 | 1980                                                                                |
| Adj No. of Lanes                                                     | 2                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                  | 1                                                                                   | 2                                                                                   | 2                                                                                   |
| Peak Hour Factor                                                     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           | 1430                                                                              | 717                                                                               | 29                                                                                | 23                                                                                | 623                                                                               | 0                                                                                 | 186                                                                               | 752                                                                               | 103                                                                                | 100                                                                                 | 676                                                                                 | 1022                                                                                |
| Arrive On Green                                                      | 0.40                                                                              | 0.40                                                                              | 0.40                                                                              | 0.18                                                                              | 0.18                                                                              | 0.00                                                                              | 0.10                                                                              | 0.24                                                                              | 0.24                                                                               | 0.06                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h                                                      | 3583                                                                              | 1797                                                                              | 72                                                                                | 129                                                                               | 3567                                                                              | 0                                                                                 | 1792                                                                              | 3189                                                                              | 438                                                                                | 1810                                                                                | 3610                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                                                 | 2648                                                                              | 0                                                                                 | 1198                                                                              | 514                                                                               | 445                                                                               | 0                                                                                 | 150                                                                               | 203                                                                               | 208                                                                                | 77                                                                                  | 540                                                                                 | 1980                                                                                |
| Grp Sat Flow(s),veh/h/ln                                             | 1792                                                                              | 0                                                                                 | 1869                                                                              | 1845                                                                              | 1759                                                                              | 0                                                                                 | 1792                                                                              | 1805                                                                              | 1823                                                                               | 1810                                                                                | 1805                                                                                | 1393                                                                                |
| Q Serve(g_s), s                                                      | 49.0                                                                              | 0.0                                                                               | 49.0                                                                              | 22.0                                                                              | 22.0                                                                              | 0.0                                                                               | 10.1                                                                              | 11.9                                                                              | 12.1                                                                               | 5.2                                                                                 | 17.5                                                                                | 23.0                                                                                |
| Cycle Q Clear(g_c), s                                                | 49.0                                                                              | 0.0                                                                               | 49.0                                                                              | 22.0                                                                              | 22.0                                                                              | 0.0                                                                               | 10.1                                                                              | 11.9                                                                              | 12.1                                                                               | 5.2                                                                                 | 17.5                                                                                | 23.0                                                                                |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 0.04                                                                              | 0.07                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.24                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 1430                                                                              | 0                                                                                 | 746                                                                               | 331                                                                               | 315                                                                               | 0                                                                                 | 186                                                                               | 426                                                                               | 430                                                                                | 100                                                                                 | 676                                                                                 | 1022                                                                                |
| V/C Ratio(X)                                                         | 1.85                                                                              | 0.00                                                                              | 1.61                                                                              | 1.55                                                                              | 1.41                                                                              | 0.00                                                                              | 0.81                                                                              | 0.48                                                                              | 0.48                                                                               | 0.77                                                                                | 0.80                                                                                | 1.94                                                                                |
| Avail Cap(c_a), veh/h                                                | 1430                                                                              | 0                                                                                 | 746                                                                               | 331                                                                               | 315                                                                               | 0                                                                                 | 584                                                                               | 426                                                                               | 430                                                                                | 516                                                                                 | 676                                                                                 | 1022                                                                                |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                             | 36.9                                                                              | 0.0                                                                               | 36.9                                                                              | 50.4                                                                              | 50.4                                                                              | 0.0                                                                               | 53.8                                                                              | 40.4                                                                              | 40.5                                                                               | 57.2                                                                                | 47.7                                                                                | 31.9                                                                                |
| Incr Delay (d2), s/veh                                               | 385.8                                                                             | 0.0                                                                               | 278.9                                                                             | 263.2                                                                             | 203.7                                                                             | 0.0                                                                               | 7.9                                                                               | 0.8                                                                               | 0.8                                                                                | 11.6                                                                                | 6.7                                                                                 | 425.8                                                                               |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 100.7                                                                             | 0.0                                                                               | 82.9                                                                              | 35.3                                                                              | 28.4                                                                              | 0.0                                                                               | 5.4                                                                               | 6.0                                                                               | 6.2                                                                                | 2.9                                                                                 | 9.4                                                                                 | 77.6                                                                                |
| LnGrp Delay(d),s/veh                                                 | 422.7                                                                             | 0.0                                                                               | 315.8                                                                             | 313.6                                                                             | 254.1                                                                             | 0.0                                                                               | 61.7                                                                              | 41.2                                                                              | 41.3                                                                               | 68.8                                                                                | 54.4                                                                                | 457.7                                                                               |
| LnGrp LOS                                                            | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | E                                                                                 | D                                                                                 | D                                                                                  | E                                                                                   | D                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                  | 3846                                                                              |                                                                                   | 959                                                                               |                                                                                   |                                                                                   |                                                                                   | 561                                                                               |                                                                                   |                                                                                    | 2597                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                | 389.4                                                                             |                                                                                   | 286.0                                                                             |                                                                                   |                                                                                   |                                                                                   | 46.7                                                                              |                                                                                   |                                                                                    | 362.3                                                                               |                                                                                     |                                                                                     |
| Approach LOS                                                         | F                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                 | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   | 26.0                                                                              | 16.8                                                                              | 27.0                                                                              |                                                                                   | 53.0                                                                              | 10.8                                                                              | 33.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   | 22.0                                                                              | 40.0                                                                              | 23.0                                                                              |                                                                                   | 49.0                                                                              | 35.0                                                                              | 28.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   | 24.0                                                                              | 12.1                                                                              | 25.0                                                                              |                                                                                   | 51.0                                                                              | 7.2                                                                               | 14.1                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.2                                                                               | 2.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  | 344.0                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |



**Appendix B**  
Synchro Timing Reports

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 1: Front Street & Laurel Street

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 39                                                                                | 337                                                                               | 246                                                                               | 448                                                                               | 86                                                                                | 5                                                                                 | 142                                                                                 | 168                                                                                 | 32                                                                                  | 149                                                                                 | 61                                                                                  |
| Future Volume (vph)  | 39                                                                                | 337                                                                               | 246                                                                               | 448                                                                               | 86                                                                                | 5                                                                                 | 142                                                                                 | 168                                                                                 | 32                                                                                  | 149                                                                                 | 61                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 27.0                                                                              | 25.0                                                                              | 32.0                                                                              | 32.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 33.8%                                                                             | 31.3%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 10.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               | 10.0%                                                                               | 25.0%                                                                               | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 16.2                                                                              | 28.8                                                                              | 15.6                                                                              | 28.3                                                                              | 28.3                                                                              | 4.0                                                                               | 11.4                                                                                | 11.4                                                                                | 4.0                                                                                 | 14.4                                                                                | 14.4                                                                                |
| Actuated g/C Ratio   | 0.22                                                                              | 0.40                                                                              | 0.22                                                                              | 0.39                                                                              | 0.39                                                                              | 0.06                                                                              | 0.16                                                                                | 0.16                                                                                | 0.06                                                                                | 0.20                                                                                | 0.20                                                                                |
| v/c Ratio            | 0.11                                                                              | 0.27                                                                              | 0.71                                                                              | 0.67                                                                              | 0.14                                                                              | 0.06                                                                              | 0.54                                                                                | 0.45                                                                                | 0.38                                                                                | 0.45                                                                                | 0.15                                                                                |
| Control Delay        | 26.0                                                                              | 18.1                                                                              | 37.3                                                                              | 25.6                                                                              | 2.6                                                                               | 37.2                                                                              | 35.9                                                                                | 8.7                                                                                 | 48.3                                                                                | 29.7                                                                                | 0.7                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 26.0                                                                              | 18.1                                                                              | 37.3                                                                              | 25.6                                                                              | 2.6                                                                               | 37.2                                                                              | 35.9                                                                                | 8.7                                                                                 | 48.3                                                                                | 29.7                                                                                | 0.7                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 18.9                                                                              |                                                                                   | 26.7                                                                              |                                                                                   |                                                                                   | 21.4                                                                                |                                                                                     |                                                                                     | 24.9                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 72.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 23.7

Intersection LOS: C

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Front Street & Laurel Street

|                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 25 s                                                                                | 27 s                                                                                | 8 s                                                                                   | 20 s                                                                                  |
|  |  |  |  |
| 20 s                                                                                | 32 s                                                                                | 8 s                                                                                   | 20 s                                                                                  |

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 1: Front Street & Laurel Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 27.0                                                                              | 25.0                                                                              | 32.0                                                                              | 32.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 33.8%                                                                             | 31.3%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 10.0%                                                                               | 25.0%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 23.0                                                                              | 21.0                                                                              | 28.0                                                                              | 28.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 4.0                                                                                 | 16.0                                                                                | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 23.0                                                                              | 21.0                                                                              | 28.0                                                                              | 28.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 4.0                                                                                 | 16.0                                                                                | 16.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 24.8                                                                              | 19.2                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 13.5                                                                               | 13.5                                                                                | 4.0                                                                                 | 21.5                                                                                | 21.5                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 50th %ile Green (s)     | 16.0                                                                              | 27.5                                                                              | 16.5                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 11.6                                                                               | 11.6                                                                                | 4.0                                                                                 | 19.6                                                                                | 19.6                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 30th %ile Green (s)     | 16.0                                                                              | 31.1                                                                              | 12.9                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 9.5                                                                                | 9.5                                                                                 | 0.0                                                                                 | 9.5                                                                                 | 9.5                                                                                 |
| 30th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Hold                                                                               | Hold                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 16.0                                                                              | 34.2                                                                              | 9.8                                                                               | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 7.2                                                                                | 7.2                                                                                 | 0.0                                                                                 | 7.2                                                                                 | 7.2                                                                                 |
| 10th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Hold                                                                               | Hold                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 72.4

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 77.5

50th %ile Actuated Cycle: 75.6

30th %ile Actuated Cycle: 65.5

10th %ile Actuated Cycle: 63.2

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |                                                                                    |  |
| Traffic Volume (vph) | 20                                                                                | 338                                                                               | 28                                                                                | 453                                                                               | 33                                                                                | 30                                                                                | 19                                                                                 | 15                                                                                  |
| Future Volume (vph)  | 20                                                                                | 338                                                                               | 28                                                                                | 453                                                                               | 33                                                                                | 30                                                                                | 19                                                                                 | 15                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                               | NA                                                                                  |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                  | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Act Effct Green (s)  | 6.7                                                                               | 36.3                                                                              | 6.8                                                                               | 36.3                                                                              | 16.1                                                                              | 16.1                                                                              |                                                                                    | 16.1                                                                                |
| Actuated g/C Ratio   | 0.10                                                                              | 0.56                                                                              | 0.10                                                                              | 0.56                                                                              | 0.25                                                                              | 0.25                                                                              |                                                                                    | 0.25                                                                                |
| v/c Ratio            | 0.16                                                                              | 0.39                                                                              | 0.18                                                                              | 0.54                                                                              | 0.10                                                                              | 0.17                                                                              |                                                                                    | 0.17                                                                                |
| Control Delay        | 30.8                                                                              | 10.6                                                                              | 30.5                                                                              | 12.6                                                                              | 21.9                                                                              | 15.1                                                                              |                                                                                    | 16.6                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Delay          | 30.8                                                                              | 10.6                                                                              | 30.5                                                                              | 17.1                                                                              | 21.9                                                                              | 15.1                                                                              |                                                                                    | 16.6                                                                                |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 |                                                                                    | B                                                                                   |
| Approach Delay       |                                                                                   | 11.7                                                                              |                                                                                   | 17.9                                                                              |                                                                                   | 17.6                                                                              |                                                                                    | 16.6                                                                                |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                    | B                                                                                   |

## Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 64.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 15.5

Intersection LOS: B

Intersection Capacity Utilization 41.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Pacific Avenue &amp; Laurel Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                 | SBT                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                     | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                   |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 8.5                                                                               | 36.0                                                                              | 8.7                                                                               | 36.2                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 7.4                                                                               | 36.0                                                                              | 7.5                                                                               | 36.1                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 50th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 30th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

## Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 64.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 72.7

70th %ile Actuated Cycle: 71.5

50th %ile Actuated Cycle: 60

30th %ile Actuated Cycle: 60

10th %ile Actuated Cycle: 60

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                      |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |  |
| Traffic Volume (vph) | 36                                                                                | 19                                                                                | 18                                                                                | 250                                                                               | 273                                                                               |
| Future Volume (vph)  | 36                                                                                | 19                                                                                | 18                                                                                | 250                                                                               | 273                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 28.0                                                                              | 28.0                                                                              | 22.0                                                                              | 57.0                                                                              | 35.0                                                                              |
| Total Split (%)      | 32.9%                                                                             | 32.9%                                                                             | 25.9%                                                                             | 67.1%                                                                             | 41.2%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Act Effect Green (s) | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| Actuated g/C Ratio   | 0.28                                                                              | 0.28                                                                              | 0.21                                                                              | 0.62                                                                              | 0.36                                                                              |
| v/c Ratio            | 0.09                                                                              | 0.05                                                                              | 0.06                                                                              | 0.26                                                                              | 0.33                                                                              |
| Control Delay        | 23.3                                                                              | 9.9                                                                               | 27.4                                                                              | 8.0                                                                               | 18.5                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               |
| Total Delay          | 23.3                                                                              | 9.9                                                                               | 27.4                                                                              | 9.5                                                                               | 18.5                                                                              |
| LOS                  | C                                                                                 | A                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 |
| Approach Delay       | 18.6                                                                              |                                                                                   |                                                                                   | 10.7                                                                              | 18.5                                                                              |
| Approach LOS         | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |

## Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 25.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Front Street &amp; Cathcart Street



Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 28.0                                                                              | 28.0                                                                              | 22.0                                                                              | 57.0                                                                              | 35.0                                                                              |
| Total Split (%)         | 32.9%                                                                             | 32.9%                                                                             | 25.9%                                                                             | 67.1%                                                                             | 41.2%                                                                             |
| Maximum Green (s)       | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 70th %ile Green (s)     | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 50th %ile Green (s)     | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 30th %ile Green (s)     | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 10th %ile Green (s)     | 24.0                                                                              | 24.0                                                                              | 18.0                                                                              | 53.0                                                                              | 31.0                                                                              |
| 10th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |

#### Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 85

70th %ile Actuated Cycle: 85

50th %ile Actuated Cycle: 85

30th %ile Actuated Cycle: 85

10th %ile Actuated Cycle: 85

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                      |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |
| Traffic Volume (vph) | 10                                                                                | 2                                                                                 | 259                                                                               | 255                                                                               |
| Future Volume (vph)  | 10                                                                                | 2                                                                                 | 259                                                                               | 255                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 24.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              |
| Total Split (%)      | 40.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effect Green (s) | 6.5                                                                               | 50.8                                                                              | 50.8                                                                              | 50.8                                                                              |
| Actuated g/C Ratio   | 0.12                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| v/c Ratio            | 0.13                                                                              | 0.00                                                                              | 0.18                                                                              | 0.22                                                                              |
| Control Delay        | 23.6                                                                              | 1.5                                                                               | 1.2                                                                               | 1.3                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay          | 23.6                                                                              | 1.5                                                                               | 1.2                                                                               | 1.3                                                                               |
| LOS                  | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |
| Approach Delay       | 23.6                                                                              |                                                                                   | 1.2                                                                               | 1.3                                                                               |
| Approach LOS         | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 53.6

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.22

Intersection Signal Delay: 1.7

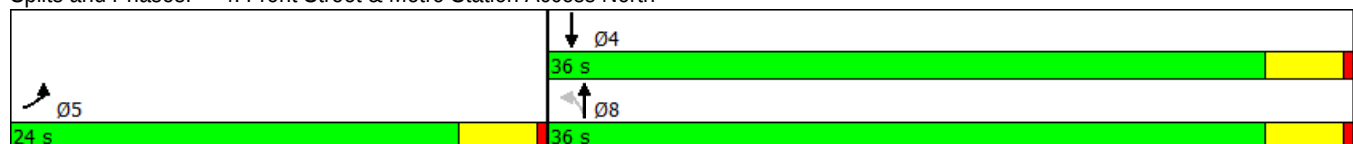
Intersection LOS: A

Intersection Capacity Utilization 25.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Front Street &amp; Metro Station Access North



## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North



| Lane Group              | EBL   | NBL   | NBT   | SBT   |
|-------------------------|-------|-------|-------|-------|
| Protected Phases        | 5     |       | 8     | 4     |
| Permitted Phases        |       | 8     |       |       |
| Minimum Initial (s)     | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)       | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)         | 24.0  | 36.0  | 36.0  | 36.0  |
| Total Split (%)         | 40.0% | 60.0% | 60.0% | 60.0% |
| Maximum Green (s)       | 20.0  | 32.0  | 32.0  | 32.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 0.5   | 0.5   | 0.5   | 0.5   |
| Lead/Lag                |       |       |       |       |
| Lead-Lag Optimize?      |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   |
| Minimum Gap (s)         | 3.0   | 3.0   | 3.0   | 3.0   |
| Time Before Reduce (s)  | 0.0   | 0.0   | 0.0   | 0.0   |
| Time To Reduce (s)      | 0.0   | 0.0   | 0.0   | 0.0   |
| Recall Mode             | None  | Max   | Max   | Max   |
| Walk Time (s)           | 5.0   | 5.0   | 5.0   | 5.0   |
| Flash Dont Walk (s)     | 11.0  | 11.0  | 11.0  | 11.0  |
| Pedestrian Calls (#/hr) | 0     | 0     | 0     | 0     |
| 90th %ile Green (s)     | 8.8   | 47.0  | 47.0  | 47.0  |
| 90th %ile Term Code     | Gap   | Dwell | Dwell | Dwell |
| 70th %ile Green (s)     | 0.0   | 47.0  | 47.0  | 47.0  |
| 70th %ile Term Code     | Skip  | Dwell | Dwell | Dwell |
| 50th %ile Green (s)     | 0.0   | 47.0  | 47.0  | 47.0  |
| 50th %ile Term Code     | Skip  | Dwell | Dwell | Dwell |
| 30th %ile Green (s)     | 0.0   | 47.0  | 47.0  | 47.0  |
| 30th %ile Term Code     | Skip  | Dwell | Dwell | Dwell |
| 10th %ile Green (s)     | 0.0   | 47.0  | 47.0  | 47.0  |
| 10th %ile Term Code     | Skip  | Dwell | Dwell | Dwell |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 53.6

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 63.8

70th %ile Actuated Cycle: 51

50th %ile Actuated Cycle: 51

30th %ile Actuated Cycle: 51

10th %ile Actuated Cycle: 51

# APPENDIX F

Existing

AM Peak

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                               | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 81                                                                                | 380                                                                               | 75                                                                                | 61                                                                                | 48                                                                                | 637                                                                               | 18                                                                                | 107                                                                                 |
| Future Volume (vph)  | 81                                                                                | 380                                                                               | 75                                                                                | 61                                                                                | 48                                                                                | 637                                                                               | 18                                                                                | 107                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 44.0                                                                              | 26.0                                                                              | 26.0                                                                                |
| Total Split (%)      | 22.2%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 48.9%                                                                             | 28.9%                                                                             | 28.9%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                                 |
| Act Effct Green (s)  | 9.6                                                                               | 40.8                                                                              | 40.8                                                                              | 8.9                                                                               | 8.9                                                                               | 40.2                                                                              | 22.1                                                                              | 22.1                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.50                                                                              | 0.50                                                                              | 0.11                                                                              | 0.11                                                                              | 0.49                                                                              | 0.27                                                                              | 0.27                                                                                |
| v/c Ratio            | 0.45                                                                              | 0.25                                                                              | 0.13                                                                              | 0.40                                                                              | 0.28                                                                              | 0.41                                                                              | 0.19                                                                              | 0.23                                                                                |
| Control Delay        | 41.5                                                                              | 13.0                                                                              | 6.8                                                                               | 41.6                                                                              | 37.9                                                                              | 15.0                                                                              | 26.4                                                                              | 6.6                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay          | 41.5                                                                              | 13.0                                                                              | 6.8                                                                               | 41.6                                                                              | 37.9                                                                              | 15.0                                                                              | 26.4                                                                              | 6.6                                                                                 |
| LOS                  | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 16.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 18.7                                                                              | 14.7                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                     |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 36.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Pacific Street & Front Street & Mission Street/Water Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |                                                                                          |
| 20 s                                                                                   | 44 s                                                                                   |                                                                                          |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 44 s                                                                                   | 26 s                                                                                     |

## Santa Cruz DRP Study

## 7: Pacific Street &amp; Front Street &amp; Mission Street/Water Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 44.0                                                                              | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 22.2%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 48.9%                                                                             | 28.9%                                                                               | 28.9%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 40.0                                                                              | 40.0                                                                              | 16.0                                                                              | 16.0                                                                              | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 13.6                                                                              | 40.9                                                                              | 40.9                                                                              | 12.7                                                                              | 12.7                                                                              | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 11.3                                                                              | 40.8                                                                              | 40.8                                                                              | 10.5                                                                              | 10.5                                                                              | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 9.7                                                                               | 40.8                                                                              | 40.8                                                                              | 8.9                                                                               | 8.9                                                                               | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 8.1                                                                               | 40.6                                                                              | 40.6                                                                              | 7.5                                                                               | 7.5                                                                               | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 40.0                                                                              | 40.0                                                                              | 0.0                                                                               | 0.0                                                                               | 40.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 87.6

70th %ile Actuated Cycle: 85.3

50th %ile Actuated Cycle: 83.7

30th %ile Actuated Cycle: 82.1

10th %ile Actuated Cycle: 70

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                      | →     | ↖     | ←     | ↗     | ↘     | ↑     | ↙     | ↓     |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group           | EBT   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
| Lane Configurations  | ↔↔    | ↖     | ↗     | ↗     |       | ↔↔    | ↖     | ↗     |
| Traffic Volume (vph) | 47    | 202   | 104   | 42    | 10    | 194   | 24    | 151   |
| Future Volume (vph)  | 47    | 202   | 104   | 42    | 10    | 194   | 24    | 151   |
| Turn Type            | NA    | Split | NA    | Perm  | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 2     | 6     | 6     |       |       | 8     |       | 4     |
| Permitted Phases     |       |       |       | 6     | 8     |       | 4     |       |
| Detector Phase       | 2     | 6     | 6     | 6     | 8     | 8     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 23.0  | 38.0  | 38.0  | 38.0  | 39.0  | 39.0  | 39.0  | 39.0  |
| Total Split (%)      | 23.0% | 38.0% | 38.0% | 38.0% | 39.0% | 39.0% | 39.0% | 39.0% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   |
| Lead/Lag             | Lag   | Lead  | Lead  | Lead  |       |       |       |       |
| Lead-Lag Optimize?   | Yes   | Yes   | Yes   | Yes   |       |       |       |       |
| Recall Mode          | None  | Max   | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)  | 7.2   | 34.6  | 34.6  | 34.6  |       | 13.3  | 13.3  | 13.3  |
| Actuated g/C Ratio   | 0.11  | 0.53  | 0.53  | 0.53  |       | 0.20  | 0.20  | 0.20  |
| v/c Ratio            | 0.25  | 0.20  | 0.20  | 0.06  |       | 0.50  | 0.17  | 0.61  |
| Control Delay        | 28.0  | 11.0  | 10.9  | 3.3   |       | 21.6  | 24.5  | 31.8  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 28.0  | 11.0  | 10.9  | 3.3   |       | 21.6  | 24.5  | 31.8  |
| LOS                  | C     | B     | B     | A     |       | C     | C     | C     |
| Approach Delay       | 28.0  |       | 10.0  |       |       | 21.6  |       | 30.9  |
| Approach LOS         | C     |       | B     |       |       | C     |       | C     |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 64.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 41.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Front Street & Soquel Avenue

|      |      |      |
|------|------|------|
| ↖ Ø6 | ↗ Ø2 | ↓ Ø4 |
| 38 s | 23 s | 39 s |
|      |      | ↖ Ø8 |
|      |      | 39 s |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 2                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 23.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                               | 39.0                                                                                |
| Total Split (%)         | 23.0%                                                                             | 38.0%                                                                             | 38.0%                                                                             | 38.0%                                                                             | 39.0%                                                                             | 39.0%                                                                             | 39.0%                                                                              | 39.0%                                                                               |
| Maximum Green (s)       | 19.0                                                                              | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 35.0                                                                              | 35.0                                                                              | 35.0                                                                               | 35.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lead                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 9.0                                                                               | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 19.4                                                                              | 19.4                                                                              | 19.4                                                                               | 19.4                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 70th %ile Green (s)     | 7.9                                                                               | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 15.7                                                                              | 15.7                                                                              | 15.7                                                                               | 15.7                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 7.2                                                                               | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 13.4                                                                              | 13.4                                                                              | 13.4                                                                               | 13.4                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 30th %ile Green (s)     | 6.5                                                                               | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 11.3                                                                              | 11.3                                                                              | 11.3                                                                               | 11.3                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 10th %ile Green (s)     | 0.0                                                                               | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              | 8.0                                                                               | 8.0                                                                               | 8.0                                                                                | 8.0                                                                                 |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |

## Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 64.9  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 74.4  
 70th %ile Actuated Cycle: 69.6  
 50th %ile Actuated Cycle: 66.6  
 30th %ile Actuated Cycle: 63.8  
 10th %ile Actuated Cycle: 50

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 11: Ocean Street & Water Street

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 161                                                                               | 297                                                                               | 136                                                                               | 450                                                                               | 255                                                                               | 78                                                                                | 466                                                                                | 40                                                                                  | 175                                                                                 | 620                                                                                 | 379                                                                                 |
| Future Volume (vph)  | 161                                                                               | 297                                                                               | 136                                                                               | 450                                                                               | 255                                                                               | 78                                                                                | 466                                                                                | 40                                                                                  | 175                                                                                 | 620                                                                                 | 379                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                  | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 17.0                                                                              | 31.0                                                                              | 26.0                                                                              | 40.0                                                                              | 40.0                                                                              | 18.0                                                                              | 34.0                                                                               | 34.0                                                                                | 29.0                                                                                | 45.0                                                                                | 45.0                                                                                |
| Total Split (%)      | 14.2%                                                                             | 25.8%                                                                             | 21.7%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 15.0%                                                                             | 28.3%                                                                              | 28.3%                                                                               | 24.2%                                                                               | 37.5%                                                                               | 37.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Act Effct Green (s)  | 10.0                                                                              | 17.0                                                                              | 12.7                                                                              | 19.7                                                                              | 19.7                                                                              | 9.8                                                                               | 20.3                                                                               | 20.3                                                                                | 14.8                                                                                | 28.4                                                                                | 28.4                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.21                                                                              | 0.16                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                              | 0.25                                                                               | 0.25                                                                                | 0.18                                                                                | 0.35                                                                                | 0.35                                                                                |
| v/c Ratio            | 0.42                                                                              | 0.52                                                                              | 0.53                                                                              | 0.58                                                                              | 0.47                                                                              | 0.40                                                                              | 0.58                                                                               | 0.08                                                                                | 0.59                                                                                | 0.55                                                                                | 0.50                                                                                |
| Control Delay        | 40.9                                                                              | 33.1                                                                              | 42.9                                                                              | 32.0                                                                              | 6.8                                                                               | 44.8                                                                              | 31.2                                                                               | 0.3                                                                                 | 41.9                                                                                | 25.6                                                                                | 5.0                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 40.9                                                                              | 33.1                                                                              | 42.9                                                                              | 32.0                                                                              | 6.8                                                                               | 44.8                                                                              | 31.2                                                                               | 0.3                                                                                 | 41.9                                                                                | 25.6                                                                                | 5.0                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 35.5                                                                              |                                                                                   | 26.2                                                                              |                                                                                   |                                                                                   | 30.9                                                                               |                                                                                     |                                                                                     | 21.4                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 81.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 26.8

Intersection LOS: C

Intersection Capacity Utilization 53.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Ocean Street & Water Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4  |
| 26 s                                                                                   | 31 s                                                                                   | 18 s                                                                                   | 45 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 17 s                                                                                   | 40 s                                                                                   | 29 s                                                                                   | 34 s                                                                                     |

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 11: Ocean Street & Water Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 17.0                                                                              | 31.0                                                                              | 26.0                                                                              | 40.0                                                                              | 40.0                                                                              | 18.0                                                                              | 34.0                                                                               | 34.0                                                                                | 29.0                                                                                | 45.0                                                                                | 45.0                                                                                |
| Total Split (%)         | 14.2%                                                                             | 25.8%                                                                             | 21.7%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 15.0%                                                                             | 28.3%                                                                              | 28.3%                                                                               | 24.2%                                                                               | 37.5%                                                                               | 37.5%                                                                               |
| Maximum Green (s)       | 13.0                                                                              | 27.0                                                                              | 22.0                                                                              | 36.0                                                                              | 36.0                                                                              | 14.0                                                                              | 30.0                                                                               | 30.0                                                                                | 25.0                                                                                | 41.0                                                                                | 41.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 13.0                                                                              | 23.2                                                                              | 19.7                                                                              | 29.9                                                                              | 29.9                                                                              | 14.0                                                                              | 30.5                                                                               | 30.5                                                                                | 23.1                                                                                | 39.6                                                                                | 39.6                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Max                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 11.5                                                                              | 19.4                                                                              | 15.2                                                                              | 23.1                                                                              | 23.1                                                                              | 11.5                                                                              | 24.6                                                                               | 24.6                                                                                | 17.7                                                                                | 30.8                                                                                | 30.8                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 9.8                                                                               | 16.4                                                                              | 12.3                                                                              | 18.9                                                                              | 18.9                                                                              | 9.5                                                                               | 20.2                                                                               | 20.2                                                                                | 14.4                                                                                | 25.1                                                                                | 25.1                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 8.5                                                                               | 14.5                                                                              | 10.2                                                                              | 16.2                                                                              | 16.2                                                                              | 8.0                                                                               | 17.3                                                                               | 17.3                                                                                | 11.8                                                                                | 21.1                                                                                | 21.1                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 6.9                                                                               | 11.4                                                                              | 7.5                                                                               | 12.0                                                                              | 12.0                                                                              | 0.0                                                                               | 11.2                                                                               | 11.2                                                                                | 8.6                                                                                 | 23.8                                                                                | 23.8                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Hold                                                                                |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 81.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 112.5

70th %ile Actuated Cycle: 92.9

50th %ile Actuated Cycle: 79.3

30th %ile Actuated Cycle: 69.8

10th %ile Actuated Cycle: 54.7

# APPENDIX F

## Santa Cruz DRP Study 12: Highway 9 & Highway 1

Existing  
AM Peak

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 211                                                                               | 1518                                                                              | 266                                                                               | 1389                                                                              | 515                                                                               | 27                                                                                | 156                                                                                | 160                                                                                 | 412                                                                                 | 158                                                                                 | 184                                                                                 |
| Future Volume (vph)  | 211                                                                               | 1518                                                                              | 266                                                                               | 1389                                                                              | 515                                                                               | 27                                                                                | 156                                                                                | 160                                                                                 | 412                                                                                 | 158                                                                                 | 184                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                 | Perm                                                                                | Split                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                  |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                  | 4                                                                                   | 8                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 42.0                                                                              | 96.0                                                                              | 28.0                                                                              | 82.0                                                                              | 82.0                                                                              | 32.0                                                                              | 32.0                                                                               | 32.0                                                                                | 44.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| Total Split (%)      | 21.0%                                                                             | 48.0%                                                                             | 14.0%                                                                             | 41.0%                                                                             | 41.0%                                                                             | 16.0%                                                                             | 16.0%                                                                              | 16.0%                                                                               | 22.0%                                                                               | 22.0%                                                                               | 22.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 29.4                                                                              | 92.0                                                                              | 20.7                                                                              | 83.2                                                                              | 83.2                                                                              | 28.0                                                                              | 28.0                                                                               | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.47                                                                              | 0.11                                                                              | 0.42                                                                              | 0.42                                                                              | 0.14                                                                              | 0.14                                                                               | 0.14                                                                                | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                |
| v/c Ratio            | 0.83                                                                              | 0.69                                                                              | 0.77                                                                              | 0.68                                                                              | 0.66                                                                              | 0.12                                                                              | 0.63                                                                               | 0.35                                                                                | 0.70                                                                                | 0.46                                                                                | 0.42                                                                                |
| Control Delay        | 106.5                                                                             | 43.2                                                                              | 101.0                                                                             | 48.6                                                                              | 26.3                                                                              | 76.4                                                                              | 91.7                                                                               | 29.9                                                                                | 80.5                                                                                | 74.5                                                                                | 10.4                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 106.5                                                                             | 43.2                                                                              | 101.0                                                                             | 48.6                                                                              | 26.3                                                                              | 76.4                                                                              | 91.7                                                                               | 29.9                                                                                | 80.5                                                                                | 74.5                                                                                | 10.4                                                                                |
| LOS                  | F                                                                                 | D                                                                                 | F                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | F                                                                                  | C                                                                                   | F                                                                                   | E                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 50.7                                                                              |                                                                                   | 49.7                                                                              |                                                                                   |                                                                                   | 61.7                                                                               |                                                                                     |                                                                                     | 62.1                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 196.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 52.7

Intersection LOS: D

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: Highway 9 & Highway 1

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 28 s                                                                                | 96 s                                                                                | 32 s                                                                                 | 44 s                                                                                  |
|  |  |                                                                                      |                                                                                       |
| 42 s                                                                                | 82 s                                                                                |                                                                                      |                                                                                       |

# APPENDIX F

Existing

AM Peak

## Santa Cruz DRP Study 12: Highway 9 & Highway 1

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 42.0                                                                              | 96.0                                                                              | 28.0                                                                              | 82.0                                                                              | 82.0                                                                              | 32.0                                                                              | 32.0                                                                                | 32.0                                                                                | 44.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| Total Split (%)         | 21.0%                                                                             | 48.0%                                                                             | 14.0%                                                                             | 41.0%                                                                             | 41.0%                                                                             | 16.0%                                                                             | 16.0%                                                                               | 16.0%                                                                               | 22.0%                                                                               | 22.0%                                                                               | 22.0%                                                                               |
| Maximum Green (s)       | 38.0                                                                              | 92.0                                                                              | 24.0                                                                              | 78.0                                                                              | 78.0                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 38.0                                                                              | 92.0                                                                              | 24.0                                                                              | 78.0                                                                              | 78.0                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 33.7                                                                              | 92.0                                                                              | 23.6                                                                              | 81.9                                                                              | 81.9                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 29.8                                                                              | 92.0                                                                              | 21.3                                                                              | 83.5                                                                              | 83.5                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 25.8                                                                              | 92.0                                                                              | 19.0                                                                              | 85.2                                                                              | 85.2                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 20.4                                                                              | 92.0                                                                              | 15.8                                                                              | 87.4                                                                              | 87.4                                                                              | 28.0                                                                              | 28.0                                                                                | 28.0                                                                                | 40.0                                                                                | 40.0                                                                                | 40.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |

### Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 196.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 200

70th %ile Actuated Cycle: 199.6

50th %ile Actuated Cycle: 197.3

30th %ile Actuated Cycle: 195

10th %ile Actuated Cycle: 191.8

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 1428                                                                              | 392                                                                               | 367                                                                               | 95                                                                                | 280                                                                               | 58                                                                                | 204                                                                               | 1471                                                                                |
| Future Volume (vph)  | 1428                                                                              | 392                                                                               | 367                                                                               | 95                                                                                | 280                                                                               | 58                                                                                | 204                                                                               | 1471                                                                                |
| Turn Type            | Split                                                                             | NA                                                                                | NA                                                                                | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | pm+ov                                                                               |
| Protected Phases     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 6                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4 6                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                |
| Total Split (s)      | 43.0                                                                              | 43.0                                                                              | 26.0                                                                              | 45.0                                                                              | 37.0                                                                              | 44.0                                                                              | 36.0                                                                              | 43.0                                                                                |
| Total Split (%)      | 28.7%                                                                             | 28.7%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 24.7%                                                                             | 29.3%                                                                             | 24.0%                                                                             | 28.7%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                |
| Act Effct Green (s)  | 39.2                                                                              | 39.2                                                                              | 19.7                                                                              | 12.3                                                                              | 35.3                                                                              | 9.6                                                                               | 30.3                                                                              | 73.5                                                                                |
| Actuated g/C Ratio   | 0.33                                                                              | 0.33                                                                              | 0.17                                                                              | 0.10                                                                              | 0.30                                                                              | 0.08                                                                              | 0.26                                                                              | 0.62                                                                                |
| v/c Ratio            | 1.49                                                                              | 1.43dl                                                                            | 0.76                                                                              | 0.57                                                                              | 0.32                                                                              | 0.44                                                                              | 0.25                                                                              | 0.82                                                                                |
| Control Delay        | 262.4                                                                             | 132.8                                                                             | 56.2                                                                              | 63.1                                                                              | 33.6                                                                              | 62.5                                                                              | 36.3                                                                              | 13.3                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay          | 262.4                                                                             | 132.8                                                                             | 56.2                                                                              | 63.1                                                                              | 33.6                                                                              | 62.5                                                                              | 36.3                                                                              | 13.3                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | C                                                                                 | E                                                                                 | D                                                                                 | B                                                                                   |
| Approach Delay       |                                                                                   | 182.2                                                                             | 56.2                                                                              |                                                                                   | 40.6                                                                              |                                                                                   | 17.7                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 | E                                                                                 |                                                                                   | D                                                                                 |                                                                                   | B                                                                                 |                                                                                     |

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 117.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 93.2

Intersection LOS: F

Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 13: Chestnut Street & Mission Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø6 |  Ø4 |  Ø3 |
| 26 s                                                                                   | 43 s                                                                                   | 36 s                                                                                   | 45 s                                                                                     |
|                                                                                        |                                                                                        |  Ø7 |  Ø8 |
|                                                                                        |                                                                                        | 44 s                                                                                   | 37 s                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Protected Phases        | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 43.0                                                                              | 43.0                                                                              | 26.0                                                                              | 45.0                                                                              | 37.0                                                                              | 44.0                                                                              | 36.0                                                                               | 43.0                                                                                |
| Total Split (%)         | 28.7%                                                                             | 28.7%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 24.7%                                                                             | 29.3%                                                                             | 24.0%                                                                              | 28.7%                                                                               |
| Maximum Green (s)       | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 41.0                                                                              | 33.0                                                                              | 40.0                                                                              | 32.0                                                                               | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 17.2                                                                              | 35.9                                                                              | 13.3                                                                              | 32.0                                                                               | 39.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 70th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 14.3                                                                              | 35.1                                                                              | 11.2                                                                              | 32.0                                                                               | 39.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 50th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 21.2                                                                              | 12.5                                                                              | 34.8                                                                              | 9.7                                                                               | 32.0                                                                               | 39.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 30th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 18.9                                                                              | 10.7                                                                              | 33.4                                                                              | 8.3                                                                               | 31.0                                                                               | 39.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                | Max                                                                                 |
| 10th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 15.0                                                                              | 7.8                                                                               | 36.4                                                                              | 0.0                                                                               | 24.6                                                                               | 39.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Skip                                                                              | Gap                                                                                | Max                                                                                 |

## Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 117.6

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 126.2

70th %ile Actuated Cycle: 123.3

50th %ile Actuated Cycle: 120.7

30th %ile Actuated Cycle: 115.6

10th %ile Actuated Cycle: 102.4

# APPENDIX F

Existing

PM Peak

## Santa Cruz DRP Study 1: Front Street & Laurel Street

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 84                                                                                | 638                                                                               | 228                                                                               | 378                                                                               | 110                                                                               | 8                                                                                 | 165                                                                                 | 229                                                                                 | 118                                                                                 | 322                                                                                 | 156                                                                                 |
| Future Volume (vph)  | 84                                                                                | 638                                                                               | 228                                                                               | 378                                                                               | 110                                                                               | 8                                                                                 | 165                                                                                 | 229                                                                                 | 118                                                                                 | 322                                                                                 | 156                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 29.0                                                                              | 18.0                                                                              | 27.0                                                                              | 27.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 13.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 36.3%                                                                             | 22.5%                                                                             | 33.8%                                                                             | 33.8%                                                                             | 10.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               | 16.3%                                                                               | 31.3%                                                                               | 31.3%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 16.1                                                                              | 26.2                                                                              | 13.1                                                                              | 23.2                                                                              | 23.2                                                                              | 4.0                                                                               | 13.0                                                                                | 13.0                                                                                | 8.6                                                                                 | 21.5                                                                                | 21.5                                                                                |
| Actuated g/C Ratio   | 0.22                                                                              | 0.35                                                                              | 0.18                                                                              | 0.31                                                                              | 0.31                                                                              | 0.05                                                                              | 0.17                                                                                | 0.17                                                                                | 0.12                                                                                | 0.29                                                                                | 0.29                                                                                |
| v/c Ratio            | 0.23                                                                              | 0.56                                                                              | 0.77                                                                              | 0.69                                                                              | 0.19                                                                              | 0.09                                                                              | 0.54                                                                                | 0.51                                                                                | 0.63                                                                                | 0.62                                                                                | 0.28                                                                                |
| Control Delay        | 28.1                                                                              | 23.0                                                                              | 48.1                                                                              | 31.4                                                                              | 1.9                                                                               | 38.1                                                                              | 35.4                                                                                | 8.1                                                                                 | 48.8                                                                                | 28.9                                                                                | 5.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 28.1                                                                              | 24.1                                                                              | 48.1                                                                              | 31.4                                                                              | 1.9                                                                               | 38.1                                                                              | 35.4                                                                                | 8.1                                                                                 | 48.8                                                                                | 28.9                                                                                | 5.4                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 24.6                                                                              |                                                                                   | 32.2                                                                              |                                                                                   |                                                                                   | 20.0                                                                                |                                                                                     |                                                                                     | 26.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 74.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Front Street & Laurel Street

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 18 s                                                                                | 29 s                                                                                | 8 s                                                                                 | 25 s                                                                                  |
|  |  |  |  |
| 20 s                                                                                | 27 s                                                                                | 13 s                                                                                | 20 s                                                                                  |

# APPENDIX F

Existing

PM Peak

## Santa Cruz DRP Study 1: Front Street & Laurel Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 29.0                                                                              | 18.0                                                                              | 27.0                                                                              | 27.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 13.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 36.3%                                                                             | 22.5%                                                                             | 33.8%                                                                             | 33.8%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 16.3%                                                                               | 31.3%                                                                               | 31.3%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 9.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 9.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 15.4                                                                               | 15.4                                                                                | 9.0                                                                                 | 28.4                                                                                | 28.4                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 50th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 12.3                                                                               | 12.3                                                                                | 9.0                                                                                 | 25.3                                                                                | 25.3                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 30th %ile Green (s)     | 16.0                                                                              | 25.5                                                                              | 13.5                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 10.3                                                                               | 10.3                                                                                | 9.0                                                                                 | 23.3                                                                                | 23.3                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 10th %ile Green (s)     | 16.0                                                                              | 28.9                                                                              | 10.1                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 11.2                                                                               | 11.2                                                                                | 0.0                                                                                 | 11.2                                                                                | 11.2                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Hold                                                                               | Hold                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 74.4

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 79.4

50th %ile Actuated Cycle: 76.3

30th %ile Actuated Cycle: 74.3

10th %ile Actuated Cycle: 62.2

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |                                                                                    |  |
| Traffic Volume (vph) | 48                                                                                | 640                                                                               | 37                                                                                | 456                                                                               | 41                                                                                | 77                                                                                | 56                                                                                 | 58                                                                                  |
| Future Volume (vph)  | 48                                                                                | 640                                                                               | 37                                                                                | 456                                                                               | 41                                                                                | 77                                                                                | 56                                                                                 | 58                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                               | NA                                                                                  |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                  | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Act Effct Green (s)  | 7.6                                                                               | 36.8                                                                              | 7.0                                                                               | 36.3                                                                              | 16.1                                                                              | 16.1                                                                              |                                                                                    | 16.1                                                                                |
| Actuated g/C Ratio   | 0.11                                                                              | 0.54                                                                              | 0.10                                                                              | 0.54                                                                              | 0.24                                                                              | 0.24                                                                              |                                                                                    | 0.24                                                                                |
| v/c Ratio            | 0.28                                                                              | 0.69                                                                              | 0.21                                                                              | 0.58                                                                              | 0.16                                                                              | 0.30                                                                              |                                                                                    | 0.44                                                                                |
| Control Delay        | 32.8                                                                              | 17.0                                                                              | 32.2                                                                              | 14.6                                                                              | 24.6                                                                              | 19.8                                                                              |                                                                                    | 25.6                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Delay          | 32.8                                                                              | 17.0                                                                              | 32.2                                                                              | 19.2                                                                              | 24.6                                                                              | 19.8                                                                              |                                                                                    | 25.6                                                                                |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 |                                                                                    | C                                                                                   |
| Approach Delay       |                                                                                   | 18.0                                                                              |                                                                                   | 20.0                                                                              |                                                                                   | 21.0                                                                              |                                                                                    | 25.6                                                                                |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                    | C                                                                                   |

## Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 67.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Pacific Avenue &amp; Laurel Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 10.3                                                                              | 37.2                                                                              | 9.1                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 70th %ile Green (s)     | 8.7                                                                               | 36.9                                                                              | 7.8                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 50th %ile Green (s)     | 7.6                                                                               | 36.7                                                                              | 6.9                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 30th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 30th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |

## Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 67.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 74.3

70th %ile Actuated Cycle: 72.7

50th %ile Actuated Cycle: 71.6

30th %ile Actuated Cycle: 60

10th %ile Actuated Cycle: 60

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                      |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |  |
| Traffic Volume (vph) | 109                                                                               | 60                                                                                | 52                                                                                | 380                                                                               | 570                                                                               |
| Future Volume (vph)  | 109                                                                               | 60                                                                                | 52                                                                                | 380                                                                               | 570                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 26.0                                                                              | 26.0                                                                              | 22.0                                                                              | 59.0                                                                              | 37.0                                                                              |
| Total Split (%)      | 30.6%                                                                             | 30.6%                                                                             | 25.9%                                                                             | 69.4%                                                                             | 43.5%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Act Effect Green (s) | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| Actuated g/C Ratio   | 0.26                                                                              | 0.26                                                                              | 0.21                                                                              | 0.65                                                                              | 0.39                                                                              |
| v/c Ratio            | 0.25                                                                              | 0.14                                                                              | 0.15                                                                              | 0.34                                                                              | 0.54                                                                              |
| Control Delay        | 26.7                                                                              | 7.7                                                                               | 28.6                                                                              | 7.7                                                                               | 20.8                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.3                                                                               | 0.0                                                                               |
| Total Delay          | 26.7                                                                              | 7.7                                                                               | 28.6                                                                              | 10.0                                                                              | 20.8                                                                              |
| LOS                  | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 |
| Approach Delay       | 19.9                                                                              |                                                                                   |                                                                                   | 12.2                                                                              | 20.8                                                                              |
| Approach LOS         | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |

## Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 17.8

Intersection LOS: B

Intersection Capacity Utilization 39.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Front Street &amp; Cathcart Street



Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 22.0                                                                              | 59.0                                                                              | 37.0                                                                              |
| Total Split (%)         | 30.6%                                                                             | 30.6%                                                                             | 25.9%                                                                             | 69.4%                                                                             | 43.5%                                                                             |
| Maximum Green (s)       | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 70th %ile Green (s)     | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 50th %ile Green (s)     | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 30th %ile Green (s)     | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 10th %ile Green (s)     | 22.0                                                                              | 22.0                                                                              | 18.0                                                                              | 55.0                                                                              | 33.0                                                                              |
| 10th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |

#### Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 85

70th %ile Actuated Cycle: 85

50th %ile Actuated Cycle: 85

30th %ile Actuated Cycle: 85

10th %ile Actuated Cycle: 85

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                      |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |
| Traffic Volume (vph) | 16                                                                                | 5                                                                                 | 403                                                                               | 605                                                                               |
| Future Volume (vph)  | 16                                                                                | 5                                                                                 | 403                                                                               | 605                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 22.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              |
| Total Split (%)      | 36.7%                                                                             | 63.3%                                                                             | 63.3%                                                                             | 63.3%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effect Green (s) | 6.8                                                                               | 52.8                                                                              | 52.8                                                                              | 52.8                                                                              |
| Actuated g/C Ratio   | 0.12                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| v/c Ratio            | 0.17                                                                              | 0.01                                                                              | 0.23                                                                              | 0.37                                                                              |
| Control Delay        | 25.3                                                                              | 1.4                                                                               | 1.3                                                                               | 1.9                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               |
| Total Delay          | 25.3                                                                              | 1.4                                                                               | 1.3                                                                               | 1.9                                                                               |
| LOS                  | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |
| Approach Delay       | 25.3                                                                              |                                                                                   | 1.3                                                                               | 1.9                                                                               |
| Approach LOS         | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 2.1

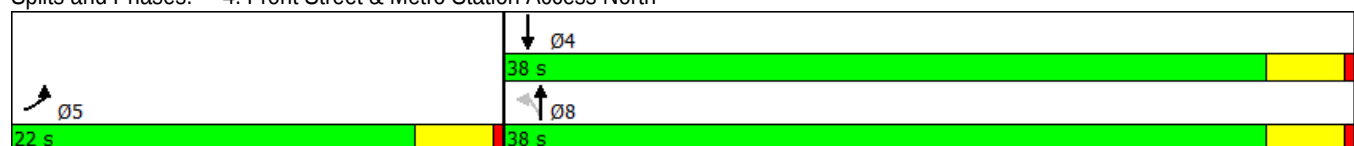
Intersection LOS: A

Intersection Capacity Utilization 42.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Front Street &amp; Metro Station Access North



## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                         |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 22.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              |
| Total Split (%)         | 36.7%                                                                             | 63.3%                                                                             | 63.3%                                                                             | 63.3%                                                                             |
| Maximum Green (s)       | 18.0                                                                              | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 9.6                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 90th %ile Term Code     | Gap                                                                               | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 70th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 70th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 50th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 50th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 30th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 30th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 10th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 10th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 66.6

70th %ile Actuated Cycle: 53

50th %ile Actuated Cycle: 53

30th %ile Actuated Cycle: 53

10th %ile Actuated Cycle: 53

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                               | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 152                                                                               | 629                                                                               | 110                                                                               | 108                                                                               | 49                                                                                | 630                                                                               | 33                                                                                | 174                                                                                 |
| Future Volume (vph)  | 152                                                                               | 629                                                                               | 110                                                                               | 108                                                                               | 49                                                                                | 630                                                                               | 33                                                                                | 174                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                |
| Total Split (s)      | 25.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 39.0                                                                              | 26.0                                                                              | 26.0                                                                                |
| Total Split (%)      | 27.8%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 43.3%                                                                             | 28.9%                                                                             | 28.9%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                                 |
| Act Effct Green (s)  | 12.6                                                                              | 39.4                                                                              | 39.4                                                                              | 10.6                                                                              | 10.6                                                                              | 35.1                                                                              | 22.0                                                                              | 22.0                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.48                                                                              | 0.48                                                                              | 0.13                                                                              | 0.13                                                                              | 0.43                                                                              | 0.27                                                                              | 0.27                                                                                |
| v/c Ratio            | 0.59                                                                              | 0.39                                                                              | 0.17                                                                              | 0.50                                                                              | 0.23                                                                              | 0.44                                                                              | 0.36                                                                              | 0.33                                                                                |
| Control Delay        | 41.1                                                                              | 15.5                                                                              | 8.9                                                                               | 41.0                                                                              | 34.2                                                                              | 18.1                                                                              | 27.7                                                                              | 6.9                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay          | 41.1                                                                              | 15.5                                                                              | 8.9                                                                               | 41.0                                                                              | 34.2                                                                              | 18.1                                                                              | 27.7                                                                              | 6.9                                                                                 |
| LOS                  | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 18.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.2                                                                              | 16.8                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | B                                                                                 |                                                                                     |

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 19.8

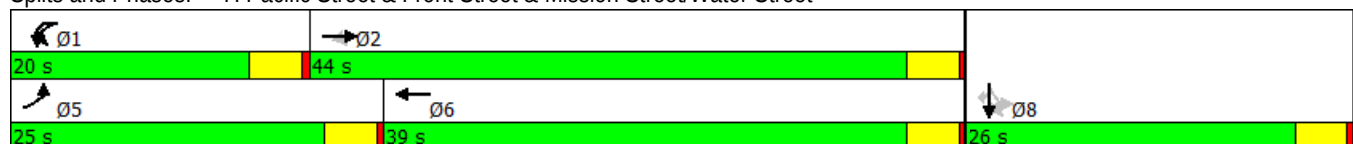
Intersection LOS: B

Intersection Capacity Utilization 44.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Pacific Street & Front Street & Mission Street/Water Street



## Santa Cruz DRP Study

## 7: Pacific Street &amp; Front Street &amp; Mission Street/Water Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 25.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 39.0                                                                              | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 27.8%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 43.3%                                                                             | 28.9%                                                                               | 28.9%                                                                               |
| Maximum Green (s)       | 21.0                                                                              | 40.0                                                                              | 40.0                                                                              | 16.0                                                                              | 16.0                                                                              | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 15.0                                                                              | 15.0                                                                              | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 14.7                                                                              | 37.4                                                                              | 37.4                                                                              | 12.3                                                                              | 12.3                                                                              | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 12.6                                                                              | 37.1                                                                              | 37.1                                                                              | 10.5                                                                              | 10.5                                                                              | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 10.6                                                                              | 36.7                                                                              | 36.7                                                                              | 8.9                                                                               | 8.9                                                                               | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 7.9                                                                               | 46.9                                                                              | 46.9                                                                              | 0.0                                                                               | 0.0                                                                               | 35.0                                                                              | 22.0                                                                                | 22.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 87

70th %ile Actuated Cycle: 83.7

50th %ile Actuated Cycle: 81.6

30th %ile Actuated Cycle: 79.6

10th %ile Actuated Cycle: 76.9

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                      | →     | ↖     | ←     | ↗     | ↘     | ↑     | ↙     | ↓     |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group           | EBT   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
| Lane Configurations  | ↔↔    | ↖     | ↗     | ↗     |       | ↔↔    | ↖     | ↗     |
| Traffic Volume (vph) | 109   | 360   | 93    | 36    | 10    | 298   | 79    | 339   |
| Future Volume (vph)  | 109   | 360   | 93    | 36    | 10    | 298   | 79    | 339   |
| Turn Type            | NA    | Split | NA    | Perm  | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 2     | 6     | 6     |       |       | 8     |       | 4     |
| Permitted Phases     |       |       |       | 6     | 8     |       | 4     |       |
| Detector Phase       | 2     | 6     | 6     | 6     | 8     | 8     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 22.0  | 35.0  | 35.0  | 35.0  | 43.0  | 43.0  | 43.0  | 43.0  |
| Total Split (%)      | 22.0% | 35.0% | 35.0% | 35.0% | 43.0% | 43.0% | 43.0% | 43.0% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   |
| Lead/Lag             | Lag   | Lead  | Lead  | Lead  |       |       |       |       |
| Lead-Lag Optimize?   | Yes   | Yes   | Yes   | Yes   |       |       |       |       |
| Recall Mode          | None  | Max   | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)  | 9.6   | 31.4  | 31.4  | 31.4  |       | 21.9  | 21.9  | 21.9  |
| Actuated g/C Ratio   | 0.13  | 0.42  | 0.42  | 0.42  |       | 0.29  | 0.29  | 0.29  |
| v/c Ratio            | 0.46  | 0.33  | 0.33  | 0.05  |       | 0.51  | 0.43  | 0.75  |
| Control Delay        | 31.4  | 18.7  | 18.8  | 3.7   |       | 17.5  | 29.1  | 33.2  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 31.4  | 18.7  | 18.8  | 3.7   |       | 17.5  | 29.1  | 33.2  |
| LOS                  | C     | B     | B     | A     |       | B     | C     | C     |
| Approach Delay       | 31.4  |       | 17.6  |       |       | 17.5  |       | 32.5  |
| Approach LOS         | C     |       | B     |       |       | B     |       | C     |

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 75.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 23.4

Intersection LOS: C

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Front Street &amp; Soquel Avenue

|      |      |      |
|------|------|------|
| ↖ Ø6 | ↗ Ø2 | ↓ Ø4 |
| 35 s | 22 s | 43 s |
|      |      | ↑ Ø8 |
|      |      | 43 s |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 2                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 22.0                                                                              | 35.0                                                                              | 35.0                                                                              | 35.0                                                                              | 43.0                                                                              | 43.0                                                                              | 43.0                                                                               | 43.0                                                                                |
| Total Split (%)         | 22.0%                                                                             | 35.0%                                                                             | 35.0%                                                                             | 35.0%                                                                             | 43.0%                                                                             | 43.0%                                                                             | 43.0%                                                                              | 43.0%                                                                               |
| Maximum Green (s)       | 18.0                                                                              | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                               | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lead                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 13.2                                                                              | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 33.2                                                                              | 33.2                                                                              | 33.2                                                                               | 33.2                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 70th %ile Green (s)     | 10.8                                                                              | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 25.8                                                                              | 25.8                                                                              | 25.8                                                                               | 25.8                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 9.5                                                                               | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 22.0                                                                              | 22.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 30th %ile Green (s)     | 8.2                                                                               | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 17.6                                                                              | 17.6                                                                              | 17.6                                                                               | 17.6                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 10th %ile Green (s)     | 6.8                                                                               | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 13.5                                                                              | 13.5                                                                              | 13.5                                                                               | 13.5                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |

#### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 75.1  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 89.4  
 70th %ile Actuated Cycle: 79.6  
 50th %ile Actuated Cycle: 74.5  
 30th %ile Actuated Cycle: 68.8  
 10th %ile Actuated Cycle: 63.3

# APPENDIX F

Existing

PM Peak

## Santa Cruz DRP Study 11: Ocean Street & Water Street

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 343                                                                               | 731                                                                               | 112                                                                               | 553                                                                               | 227                                                                               | 120                                                                               | 553                                                                               | 98                                                                                  | 290                                                                                 | 856                                                                                 | 344                                                                                 |
| Future Volume (vph)  | 343                                                                               | 731                                                                               | 112                                                                               | 553                                                                               | 227                                                                               | 120                                                                               | 553                                                                               | 98                                                                                  | 290                                                                                 | 856                                                                                 | 344                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 23.0                                                                              | 42.0                                                                              | 17.0                                                                              | 36.0                                                                              | 36.0                                                                              | 18.0                                                                              | 29.0                                                                              | 29.0                                                                                | 32.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)      | 19.2%                                                                             | 35.0%                                                                             | 14.2%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 15.0%                                                                             | 24.2%                                                                             | 24.2%                                                                               | 26.7%                                                                               | 35.8%                                                                               | 35.8%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Act Effct Green (s)  | 16.1                                                                              | 32.7                                                                              | 11.3                                                                              | 27.9                                                                              | 27.9                                                                              | 11.9                                                                              | 23.7                                                                              | 23.7                                                                                | 22.7                                                                                | 34.6                                                                                | 34.6                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.31                                                                              | 0.11                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.22                                                                              | 0.22                                                                                | 0.21                                                                                | 0.32                                                                                | 0.32                                                                                |
| v/c Ratio            | 0.69                                                                              | 0.81                                                                              | 0.62                                                                              | 0.62                                                                              | 0.40                                                                              | 0.62                                                                              | 0.73                                                                              | 0.21                                                                                | 0.80                                                                                | 0.76                                                                                | 0.50                                                                                |
| Control Delay        | 52.5                                                                              | 41.3                                                                              | 63.9                                                                              | 39.1                                                                              | 6.5                                                                               | 63.1                                                                              | 46.4                                                                              | 2.4                                                                                 | 57.8                                                                                | 38.5                                                                                | 8.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 52.5                                                                              | 41.3                                                                              | 63.9                                                                              | 39.1                                                                              | 6.5                                                                               | 63.1                                                                              | 46.4                                                                              | 2.4                                                                                 | 57.8                                                                                | 38.5                                                                                | 8.5                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 44.5                                                                              |                                                                                   | 33.9                                                                              |                                                                                   |                                                                                   | 43.4                                                                              |                                                                                     |                                                                                     | 35.3                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 106.9

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 39.0

Intersection LOS: D

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Ocean Street & Water Street

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 17 s                                                                                | 42 s                                                                                | 18 s                                                                                | 43 s                                                                                  |
|  |  |  |  |
| 23 s                                                                                | 36 s                                                                                | 32 s                                                                                | 29 s                                                                                  |

# APPENDIX F

Existing

PM Peak

## Santa Cruz DRP Study 11: Ocean Street & Water Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 23.0                                                                              | 42.0                                                                              | 17.0                                                                              | 36.0                                                                              | 36.0                                                                              | 18.0                                                                              | 29.0                                                                               | 29.0                                                                                | 32.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)         | 19.2%                                                                             | 35.0%                                                                             | 14.2%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 15.0%                                                                             | 24.2%                                                                              | 24.2%                                                                               | 26.7%                                                                               | 35.8%                                                                               | 35.8%                                                                               |
| Maximum Green (s)       | 19.0                                                                              | 38.0                                                                              | 13.0                                                                              | 32.0                                                                              | 32.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 19.0                                                                              | 38.0                                                                              | 13.0                                                                              | 32.0                                                                              | 32.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 19.0                                                                              | 38.0                                                                              | 13.0                                                                              | 32.0                                                                              | 32.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 17.4                                                                              | 36.0                                                                              | 12.9                                                                              | 31.5                                                                              | 31.5                                                                              | 13.4                                                                              | 27.4                                                                               | 27.4                                                                                | 25.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Max                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 14.5                                                                              | 30.3                                                                              | 10.4                                                                              | 26.2                                                                              | 26.2                                                                              | 10.8                                                                              | 23.3                                                                               | 23.3                                                                                | 20.0                                                                                | 32.5                                                                                | 32.5                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 10.9                                                                              | 22.2                                                                              | 7.4                                                                               | 18.7                                                                              | 18.7                                                                              | 7.6                                                                               | 17.5                                                                               | 17.5                                                                                | 13.9                                                                                | 23.8                                                                                | 23.8                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 106.9

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 120

70th %ile Actuated Cycle: 120

50th %ile Actuated Cycle: 117.3

30th %ile Actuated Cycle: 100

10th %ile Actuated Cycle: 77

# APPENDIX F

Existing

PM Peak

## Santa Cruz DRP Study 12: Highway 9 & Highway 1

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 227                                                                               | 1320                                                                              | 293                                                                               | 1262                                                                              | 472                                                                               | 102                                                                               | 246                                                                                | 423                                                                                 | 648                                                                                 | 309                                                                                 | 247                                                                                 |
| Future Volume (vph)  | 227                                                                               | 1320                                                                              | 293                                                                               | 1262                                                                              | 472                                                                               | 102                                                                               | 246                                                                                | 423                                                                                 | 648                                                                                 | 309                                                                                 | 247                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                 | Perm                                                                                | Split                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                  |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                  | 4                                                                                   | 8                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 39.0                                                                              | 78.0                                                                              | 30.0                                                                              | 69.0                                                                              | 69.0                                                                              | 41.0                                                                              | 41.0                                                                               | 41.0                                                                                | 51.0                                                                                | 51.0                                                                                | 51.0                                                                                |
| Total Split (%)      | 19.5%                                                                             | 39.0%                                                                             | 15.0%                                                                             | 34.5%                                                                             | 34.5%                                                                             | 20.5%                                                                             | 20.5%                                                                              | 20.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 30.4                                                                              | 74.1                                                                              | 22.6                                                                              | 66.3                                                                              | 66.3                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.38                                                                              | 0.11                                                                              | 0.34                                                                              | 0.34                                                                              | 0.19                                                                              | 0.19                                                                               | 0.19                                                                                | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 0.87                                                                              | 0.79                                                                              | 0.80                                                                              | 0.78                                                                              | 0.74                                                                              | 0.32                                                                              | 0.76                                                                               | 0.66                                                                                | 0.84                                                                                | 0.75                                                                                | 0.50                                                                                |
| Control Delay        | 110.7                                                                             | 58.2                                                                              | 100.4                                                                             | 63.2                                                                              | 36.2                                                                              | 72.8                                                                              | 90.7                                                                               | 47.2                                                                                | 81.9                                                                                | 81.5                                                                                | 19.8                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 110.7                                                                             | 58.2                                                                              | 100.4                                                                             | 63.2                                                                              | 36.2                                                                              | 72.8                                                                              | 90.7                                                                               | 47.2                                                                                | 81.9                                                                                | 81.5                                                                                | 19.8                                                                                |
| LOS                  | F                                                                                 | E                                                                                 | F                                                                                 | E                                                                                 | D                                                                                 | E                                                                                 | F                                                                                  | D                                                                                   | F                                                                                   | F                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 65.5                                                                              |                                                                                   | 62.3                                                                              |                                                                                   |                                                                                   | 64.5                                                                               |                                                                                     |                                                                                     | 69.0                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | E                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 196.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 65.0

Intersection LOS: E

Intersection Capacity Utilization 81.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: Highway 9 & Highway 1

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø4                                                                                  | Ø8                                                                                    |
| 30 s                                                                                | 78 s                                                                                | 41 s                                                                                | 51 s                                                                                  |
|  |  |                                                                                     |                                                                                       |
| Ø5                                                                                  | Ø6                                                                                  |                                                                                     |                                                                                       |
| 39 s                                                                                | 69 s                                                                                |                                                                                     |                                                                                       |

# APPENDIX F

## Santa Cruz DRP Study 12: Highway 9 & Highway 1

Existing  
PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                  |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 39.0                                                                              | 78.0                                                                              | 30.0                                                                              | 69.0                                                                              | 69.0                                                                              | 41.0                                                                              | 41.0                                                                               | 41.0                                                                                | 51.0                                                                                | 51.0                                                                                | 51.0                                                                                |
| Total Split (%)         | 19.5%                                                                             | 39.0%                                                                             | 15.0%                                                                             | 34.5%                                                                             | 34.5%                                                                             | 20.5%                                                                             | 20.5%                                                                              | 20.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               |
| Maximum Green (s)       | 35.0                                                                              | 74.0                                                                              | 26.0                                                                              | 65.0                                                                              | 65.0                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 35.0                                                                              | 74.0                                                                              | 26.0                                                                              | 65.0                                                                              | 65.0                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 35.0                                                                              | 74.2                                                                              | 25.8                                                                              | 65.0                                                                              | 65.0                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 32.0                                                                              | 74.0                                                                              | 23.3                                                                              | 65.3                                                                              | 65.3                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 28.0                                                                              | 74.0                                                                              | 20.9                                                                              | 66.9                                                                              | 66.9                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 22.4                                                                              | 74.0                                                                              | 17.4                                                                              | 69.0                                                                              | 69.0                                                                              | 37.0                                                                              | 37.0                                                                               | 37.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |

### Intersection Summary

Cycle Length: 200  
 Actuated Cycle Length: 196.7  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 200  
 70th %ile Actuated Cycle: 200  
 50th %ile Actuated Cycle: 197.3  
 30th %ile Actuated Cycle: 194.9  
 10th %ile Actuated Cycle: 191.4

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                      |  |  |  |  |  |  |   |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 1312                                                                              | 486                                                                               | 412                                                                               | 74                                                                                | 276                                                                               | 42                                                                                | 258                                                                                | 1380                                                                                |
| Future Volume (vph)  | 1312                                                                              | 486                                                                               | 412                                                                               | 74                                                                                | 276                                                                               | 42                                                                                | 258                                                                                | 1380                                                                                |
| Turn Type            | Split                                                                             | NA                                                                                | NA                                                                                | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | pm+ov                                                                               |
| Protected Phases     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 4 6                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 45.0                                                                              | 32.0                                                                              | 50.0                                                                              | 37.0                                                                               | 42.0                                                                                |
| Total Split (%)      | 28.0%                                                                             | 28.0%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 21.3%                                                                             | 33.3%                                                                             | 24.7%                                                                              | 28.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Act Effct Green (s)  | 38.8                                                                              | 38.8                                                                              | 20.0                                                                              | 10.2                                                                              | 29.0                                                                              | 8.1                                                                               | 27.2                                                                               | 70.2                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.18                                                                              | 0.09                                                                              | 0.26                                                                              | 0.07                                                                              | 0.25                                                                               | 0.64                                                                                |
| v/c Ratio            | 1.18                                                                              | 1.12dl                                                                            | 0.74                                                                              | 0.46                                                                              | 0.32                                                                              | 0.32                                                                              | 0.30                                                                               | 0.68                                                                                |
| Control Delay        | 131.0                                                                             | 80.9                                                                              | 51.3                                                                              | 59.7                                                                              | 33.4                                                                              | 58.6                                                                              | 35.3                                                                               | 6.7                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay          | 131.0                                                                             | 80.9                                                                              | 51.3                                                                              | 59.7                                                                              | 33.4                                                                              | 58.6                                                                              | 35.3                                                                               | 6.7                                                                                 |
| LOS                  | F                                                                                 | F                                                                                 | D                                                                                 | E                                                                                 | C                                                                                 | E                                                                                 | D                                                                                  | A                                                                                   |
| Approach Delay       |                                                                                   | 98.5                                                                              | 51.3                                                                              |                                                                                   | 38.7                                                                              |                                                                                   | 12.4                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   | B                                                                                  |                                                                                     |

Intersection Summary

|                                                                 |                        |
|-----------------------------------------------------------------|------------------------|
| Cycle Length: 150                                               |                        |
| Actuated Cycle Length: 109.8                                    |                        |
| Natural Cycle: 100                                              |                        |
| Control Type: Actuated-Uncoordinated                            |                        |
| Maximum v/c Ratio: 1.18                                         |                        |
| Intersection Signal Delay: 55.4                                 | Intersection LOS: E    |
| Intersection Capacity Utilization 75.0%                         | ICU Level of Service D |
| Analysis Period (min) 15                                        |                        |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. |                        |

Splits and Phases: 13: Chestnut Street & Mission Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø6 |  Ø4 |  Ø3 |
| 26 s                                                                                   | 42 s                                                                                   | 37 s                                                                                   | 45 s                                                                                     |
|                                                                                        |                                                                                        |  Ø7 |  Ø8 |
|                                                                                        |                                                                                        | 50 s                                                                                   | 32 s                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Protected Phases        | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 45.0                                                                              | 32.0                                                                              | 50.0                                                                              | 37.0                                                                               | 42.0                                                                                |
| Total Split (%)         | 28.0%                                                                             | 28.0%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 21.3%                                                                             | 33.3%                                                                             | 24.7%                                                                              | 28.0%                                                                               |
| Maximum Green (s)       | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 41.0                                                                              | 28.0                                                                              | 46.0                                                                              | 33.0                                                                               | 38.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 14.3                                                                              | 36.2                                                                              | 11.1                                                                              | 33.0                                                                               | 38.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 70th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 11.9                                                                              | 35.5                                                                              | 9.4                                                                               | 33.0                                                                               | 38.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 50th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 10.4                                                                              | 31.7                                                                              | 8.2                                                                               | 29.5                                                                               | 38.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                | Max                                                                                 |
| 30th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 19.3                                                                              | 8.7                                                                               | 25.9                                                                              | 7.0                                                                               | 24.2                                                                               | 38.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                | Max                                                                                 |
| 10th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 14.6                                                                              | 0.0                                                                               | 17.9                                                                              | 0.0                                                                               | 17.9                                                                               | 38.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Skip                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                                | Max                                                                                 |

## Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 109.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 123.3

70th %ile Actuated Cycle: 120.9

50th %ile Actuated Cycle: 115.9

30th %ile Actuated Cycle: 106.2

10th %ile Actuated Cycle: 82.5

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing + Project  
AM Peak

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 48                                                                                | 337                                                                               | 246                                                                               | 448                                                                               | 89                                                                                | 5                                                                                 | 145                                                                                 | 168                                                                                 | 44                                                                                  | 156                                                                                 | 90                                                                                  |
| Future Volume (vph)  | 48                                                                                | 337                                                                               | 246                                                                               | 448                                                                               | 89                                                                                | 5                                                                                 | 145                                                                                 | 168                                                                                 | 44                                                                                  | 156                                                                                 | 90                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 27.0                                                                              | 25.0                                                                              | 32.0                                                                              | 32.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 33.8%                                                                             | 31.3%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 10.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               | 10.0%                                                                               | 25.0%                                                                               | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 16.1                                                                              | 28.7                                                                              | 15.7                                                                              | 28.2                                                                              | 28.2                                                                              | 4.0                                                                               | 11.5                                                                                | 11.5                                                                                | 4.0                                                                                 | 14.6                                                                                | 14.6                                                                                |
| Actuated g/C Ratio   | 0.22                                                                              | 0.40                                                                              | 0.22                                                                              | 0.39                                                                              | 0.39                                                                              | 0.06                                                                              | 0.16                                                                                | 0.16                                                                                | 0.06                                                                                | 0.20                                                                                | 0.20                                                                                |
| v/c Ratio            | 0.14                                                                              | 0.27                                                                              | 0.71                                                                              | 0.67                                                                              | 0.14                                                                              | 0.06                                                                              | 0.54                                                                                | 0.45                                                                                | 0.52                                                                                | 0.46                                                                                | 0.22                                                                                |
| Control Delay        | 26.3                                                                              | 18.1                                                                              | 37.4                                                                              | 25.7                                                                              | 2.9                                                                               | 37.2                                                                              | 36.1                                                                                | 8.6                                                                                 | 58.3                                                                                | 30.1                                                                                | 1.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 26.3                                                                              | 18.1                                                                              | 37.4                                                                              | 25.7                                                                              | 2.9                                                                               | 37.2                                                                              | 36.1                                                                                | 8.6                                                                                 | 58.3                                                                                | 30.1                                                                                | 1.5                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | D                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 19.1                                                                              |                                                                                   | 26.8                                                                              |                                                                                   |                                                                                   | 21.6                                                                                |                                                                                     |                                                                                     | 25.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 72.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 23.9

Intersection LOS: C

Intersection Capacity Utilization 51.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Front Street & Laurel Street

|                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 25 s                                                                                | 27 s                                                                                | 8 s                                                                                   | 20 s                                                                                  |
|  |  |  |  |
| 20 s                                                                                | 32 s                                                                                | 8 s                                                                                   | 20 s                                                                                  |

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing + Project  
AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 27.0                                                                              | 25.0                                                                              | 32.0                                                                              | 32.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 33.8%                                                                             | 31.3%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 10.0%                                                                               | 25.0%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 23.0                                                                              | 21.0                                                                              | 28.0                                                                              | 28.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 4.0                                                                                 | 16.0                                                                                | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 23.0                                                                              | 21.0                                                                              | 28.0                                                                              | 28.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 4.0                                                                                 | 16.0                                                                                | 16.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 24.7                                                                              | 19.3                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 13.7                                                                               | 13.7                                                                                | 4.0                                                                                 | 21.7                                                                                | 21.7                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 50th %ile Green (s)     | 16.0                                                                              | 27.5                                                                              | 16.5                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 11.7                                                                               | 11.7                                                                                | 4.0                                                                                 | 19.7                                                                                | 19.7                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 30th %ile Green (s)     | 16.0                                                                              | 31.1                                                                              | 12.9                                                                              | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 9.7                                                                                | 9.7                                                                                 | 0.0                                                                                 | 9.7                                                                                 | 9.7                                                                                 |
| 30th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Hold                                                                               | Hold                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 16.0                                                                              | 34.2                                                                              | 9.8                                                                               | 28.0                                                                              | 28.0                                                                              | 0.0                                                                               | 7.4                                                                                | 7.4                                                                                 | 0.0                                                                                 | 7.4                                                                                 | 7.4                                                                                 |
| 10th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Hold                                                                               | Hold                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 72.5

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 77.7

50th %ile Actuated Cycle: 75.7

30th %ile Actuated Cycle: 65.7

10th %ile Actuated Cycle: 63.4

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |                                                                                    |  |
| Traffic Volume (vph) | 22                                                                                | 345                                                                               | 34                                                                                | 476                                                                               | 33                                                                                | 31                                                                                | 20                                                                                 | 17                                                                                  |
| Future Volume (vph)  | 22                                                                                | 345                                                                               | 34                                                                                | 476                                                                               | 33                                                                                | 31                                                                                | 20                                                                                 | 17                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                               | NA                                                                                  |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                  | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Act Effct Green (s)  | 6.9                                                                               | 36.3                                                                              | 7.1                                                                               | 38.5                                                                              | 16.1                                                                              | 16.1                                                                              |                                                                                    | 16.1                                                                                |
| Actuated g/C Ratio   | 0.10                                                                              | 0.54                                                                              | 0.11                                                                              | 0.57                                                                              | 0.24                                                                              | 0.24                                                                              |                                                                                    | 0.24                                                                                |
| v/c Ratio            | 0.18                                                                              | 0.41                                                                              | 0.22                                                                              | 0.55                                                                              | 0.11                                                                              | 0.19                                                                              |                                                                                    | 0.21                                                                                |
| Control Delay        | 32.1                                                                              | 11.9                                                                              | 31.9                                                                              | 12.8                                                                              | 23.2                                                                              | 15.6                                                                              |                                                                                    | 17.0                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 18.5                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Delay          | 32.1                                                                              | 11.9                                                                              | 31.9                                                                              | 31.3                                                                              | 23.2                                                                              | 15.6                                                                              |                                                                                    | 17.0                                                                                |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 |                                                                                    | B                                                                                   |
| Approach Delay       |                                                                                   | 13.1                                                                              |                                                                                   | 31.3                                                                              |                                                                                   | 18.3                                                                              |                                                                                    | 17.0                                                                                |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                    | B                                                                                   |

**Intersection Summary**

Cycle Length: 80

Actuated Cycle Length: 67.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 22.9

Intersection LOS: C

Intersection Capacity Utilization 45.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Pacific Avenue & Laurel Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                 | SBT                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                     | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                   |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 8.9                                                                               | 36.0                                                                              | 9.2                                                                               | 36.3                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 7.6                                                                               | 36.0                                                                              | 7.9                                                                               | 36.3                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 7.0                                                                               | 47.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 50th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Gap                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 30th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

**Intersection Summary**

Cycle Length: 80

Actuated Cycle Length: 67.2

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 73.2

70th %ile Actuated Cycle: 71.9

50th %ile Actuated Cycle: 71

30th %ile Actuated Cycle: 60

10th %ile Actuated Cycle: 60

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                      |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |  |
| Traffic Volume (vph) | 48                                                                                | 21                                                                                | 22                                                                                | 316                                                                               | 308                                                                               |
| Future Volume (vph)  | 48                                                                                | 21                                                                                | 22                                                                                | 316                                                                               | 308                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 27.0                                                                              | 27.0                                                                              | 23.0                                                                              | 58.0                                                                              | 35.0                                                                              |
| Total Split (%)      | 31.8%                                                                             | 31.8%                                                                             | 27.1%                                                                             | 68.2%                                                                             | 41.2%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Act Effect Green (s) | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| Actuated g/C Ratio   | 0.27                                                                              | 0.27                                                                              | 0.22                                                                              | 0.64                                                                              | 0.36                                                                              |
| v/c Ratio            | 0.13                                                                              | 0.06                                                                              | 0.07                                                                              | 0.33                                                                              | 0.37                                                                              |
| Control Delay        | 24.6                                                                              | 10.0                                                                              | 26.8                                                                              | 8.1                                                                               | 19.1                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.1                                                                               | 0.0                                                                               |
| Total Delay          | 24.6                                                                              | 10.0                                                                              | 26.8                                                                              | 10.2                                                                              | 19.1                                                                              |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Delay       | 20.2                                                                              |                                                                                   |                                                                                   | 11.3                                                                              | 19.1                                                                              |
| Approach LOS         | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |

## Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 27.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Front Street &amp; Cathcart Street



Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 27.0                                                                              | 27.0                                                                              | 23.0                                                                              | 58.0                                                                              | 35.0                                                                              |
| Total Split (%)         | 31.8%                                                                             | 31.8%                                                                             | 27.1%                                                                             | 68.2%                                                                             | 41.2%                                                                             |
| Maximum Green (s)       | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 70th %ile Green (s)     | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 50th %ile Green (s)     | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 30th %ile Green (s)     | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 10th %ile Green (s)     | 23.0                                                                              | 23.0                                                                              | 19.0                                                                              | 54.0                                                                              | 31.0                                                                              |
| 10th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |

#### Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 85

70th %ile Actuated Cycle: 85

50th %ile Actuated Cycle: 85

30th %ile Actuated Cycle: 85

10th %ile Actuated Cycle: 85

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                      |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |
| Traffic Volume (vph) | 12                                                                                | 2                                                                                 | 300                                                                               | 291                                                                               |
| Future Volume (vph)  | 12                                                                                | 2                                                                                 | 300                                                                               | 291                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 23.0                                                                              | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              |
| Total Split (%)      | 38.3%                                                                             | 61.7%                                                                             | 61.7%                                                                             | 61.7%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effect Green (s) | 6.7                                                                               | 51.8                                                                              | 51.8                                                                              | 51.8                                                                              |
| Actuated g/C Ratio   | 0.12                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| v/c Ratio            | 0.16                                                                              | 0.00                                                                              | 0.21                                                                              | 0.25                                                                              |
| Control Delay        | 23.7                                                                              | 1.5                                                                               | 1.3                                                                               | 1.4                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay          | 23.7                                                                              | 1.5                                                                               | 1.3                                                                               | 1.4                                                                               |
| LOS                  | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |
| Approach Delay       | 23.7                                                                              |                                                                                   | 1.3                                                                               | 1.4                                                                               |
| Approach LOS         | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.7

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.25

Intersection Signal Delay: 1.9

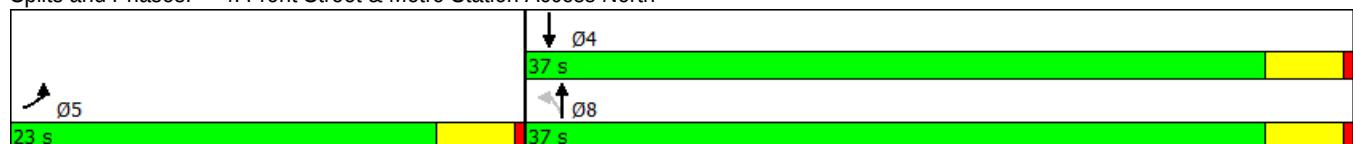
Intersection LOS: A

Intersection Capacity Utilization 27.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Front Street &amp; Metro Station Access North



## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                         |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 23.0                                                                              | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              |
| Total Split (%)         | 38.3%                                                                             | 61.7%                                                                             | 61.7%                                                                             | 61.7%                                                                             |
| Maximum Green (s)       | 19.0                                                                              | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 9.4                                                                               | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |
| 90th %ile Term Code     | Gap                                                                               | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 70th %ile Green (s)     | 0.0                                                                               | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |
| 70th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 50th %ile Green (s)     | 0.0                                                                               | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |
| 50th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 30th %ile Green (s)     | 0.0                                                                               | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |
| 30th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 10th %ile Green (s)     | 0.0                                                                               | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |
| 10th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 65.4

70th %ile Actuated Cycle: 52

50th %ile Actuated Cycle: 52

30th %ile Actuated Cycle: 52

10th %ile Actuated Cycle: 52

# APPENDIX F

Existing + Project

AM Peak

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

|                      |  |  |  |  |  |  |   |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 81                                                                                | 380                                                                               | 75                                                                                | 61                                                                                | 48                                                                                | 637                                                                               | 18                                                                                  | 107                                                                                 |
| Future Volume (vph)  | 81                                                                                | 380                                                                               | 75                                                                                | 61                                                                                | 48                                                                                | 637                                                                               | 18                                                                                  | 107                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 44.0                                                                              | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)      | 22.2%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 48.9%                                                                             | 28.9%                                                                               | 28.9%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 9.6                                                                               | 40.8                                                                              | 40.8                                                                              | 8.9                                                                               | 8.9                                                                               | 40.2                                                                              | 22.1                                                                                | 22.1                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.50                                                                              | 0.50                                                                              | 0.11                                                                              | 0.11                                                                              | 0.49                                                                              | 0.27                                                                                | 0.27                                                                                |
| v/c Ratio            | 0.45                                                                              | 0.25                                                                              | 0.13                                                                              | 0.40                                                                              | 0.28                                                                              | 0.41                                                                              | 0.21                                                                                | 0.23                                                                                |
| Control Delay        | 41.5                                                                              | 13.0                                                                              | 6.8                                                                               | 41.6                                                                              | 37.9                                                                              | 15.0                                                                              | 26.7                                                                                | 6.6                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 41.5                                                                              | 13.0                                                                              | 6.8                                                                               | 41.6                                                                              | 37.9                                                                              | 15.0                                                                              | 26.7                                                                                | 6.6                                                                                 |
| LOS                  | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 16.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 18.7                                                                              | 15.3                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 17.3

Intersection LOS: B

Intersection Capacity Utilization 36.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Pacific Street & Front Street & Mission Street/Water Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |                                                                                          |
| 20 s                                                                                   | 44 s                                                                                   |                                                                                          |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 44 s                                                                                   | 26 s                                                                                     |

## Santa Cruz DRP Study

## 7: Pacific Street &amp; Front Street &amp; Mission Street/Water Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                  |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 44.0                                                                              | 44.0                                                                              | 20.0                                                                              | 20.0                                                                              | 44.0                                                                              | 26.0                                                                               | 26.0                                                                                |
| Total Split (%)         | 22.2%                                                                             | 48.9%                                                                             | 48.9%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 48.9%                                                                             | 28.9%                                                                              | 28.9%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 40.0                                                                              | 40.0                                                                              | 16.0                                                                              | 16.0                                                                              | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 13.6                                                                              | 40.9                                                                              | 40.9                                                                              | 12.7                                                                              | 12.7                                                                              | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 70th %ile Green (s)     | 11.3                                                                              | 40.8                                                                              | 40.8                                                                              | 10.5                                                                              | 10.5                                                                              | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 50th %ile Green (s)     | 9.7                                                                               | 40.8                                                                              | 40.8                                                                              | 8.9                                                                               | 8.9                                                                               | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 30th %ile Green (s)     | 8.1                                                                               | 40.6                                                                              | 40.6                                                                              | 7.5                                                                               | 7.5                                                                               | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 40.0                                                                              | 40.0                                                                              | 0.0                                                                               | 0.0                                                                               | 40.0                                                                              | 22.0                                                                               | 22.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 87.6

70th %ile Actuated Cycle: 85.3

50th %ile Actuated Cycle: 83.7

30th %ile Actuated Cycle: 82.1

10th %ile Actuated Cycle: 70

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Existing + Project  
AM Peak

|                      | →     | ↖     | ←     | ↗     | ↘     | ↑     | ↙     | ↓     |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group           | EBT   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
| Lane Configurations  | ↕↕    | ↖     | ↗     | ↗     |       | ↕↕    | ↖     | ↗     |
| Traffic Volume (vph) | 52    | 223   | 104   | 42    | 10    | 229   | 24    | 172   |
| Future Volume (vph)  | 52    | 223   | 104   | 42    | 10    | 229   | 24    | 172   |
| Turn Type            | NA    | Split | NA    | Perm  | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 2     | 6     | 6     |       |       | 8     |       | 4     |
| Permitted Phases     |       |       |       | 6     | 8     |       | 4     |       |
| Detector Phase       | 2     | 6     | 6     | 6     | 8     | 8     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 23.0  | 37.0  | 37.0  | 37.0  | 40.0  | 40.0  | 40.0  | 40.0  |
| Total Split (%)      | 23.0% | 37.0% | 37.0% | 37.0% | 40.0% | 40.0% | 40.0% | 40.0% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   |
| Lead/Lag             | Lag   | Lead  | Lead  | Lead  |       |       |       |       |
| Lead-Lag Optimize?   | Yes   | Yes   | Yes   | Yes   |       |       |       |       |
| Recall Mode          | None  | Max   | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)  | 7.4   | 33.7  | 33.7  | 33.7  |       | 14.3  | 14.3  | 14.3  |
| Actuated g/C Ratio   | 0.11  | 0.52  | 0.52  | 0.52  |       | 0.22  | 0.22  | 0.22  |
| v/c Ratio            | 0.27  | 0.22  | 0.22  | 0.06  |       | 0.60  | 0.22  | 0.64  |
| Control Delay        | 27.8  | 11.9  | 11.8  | 3.6   |       | 18.9  | 25.8  | 32.0  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 27.8  | 11.9  | 11.8  | 3.6   |       | 18.9  | 25.8  | 32.0  |
| LOS                  | C     | B     | B     | A     |       | B     | C     | C     |
| Approach Delay       | 27.8  |       | 10.9  |       |       | 18.9  |       | 31.3  |
| Approach LOS         | C     |       | B     |       |       | B     |       | C     |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 65  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 19.4  
 Intersection Capacity Utilization 42.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 8: Front Street & Soquel Avenue

|      |      |      |
|------|------|------|
| ↖ Ø6 | ↗ Ø2 | ↓ Ø4 |
| 37 s | 23 s | 40 s |
|      |      | ↖ Ø8 |
|      |      | 40 s |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Existing + Project  
AM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 2                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 23.0                                                                              | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              | 40.0                                                                              | 40.0                                                                              | 40.0                                                                               | 40.0                                                                                |
| Total Split (%)         | 23.0%                                                                             | 37.0%                                                                             | 37.0%                                                                             | 37.0%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 40.0%                                                                              | 40.0%                                                                               |
| Maximum Green (s)       | 19.0                                                                              | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                               | 36.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lead                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 9.3                                                                               | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 21.0                                                                              | 21.0                                                                              | 21.0                                                                               | 21.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 70th %ile Green (s)     | 8.0                                                                               | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 16.9                                                                              | 16.9                                                                              | 16.9                                                                               | 16.9                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 7.3                                                                               | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 14.4                                                                              | 14.4                                                                              | 14.4                                                                               | 14.4                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 30th %ile Green (s)     | 6.6                                                                               | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 12.1                                                                              | 12.1                                                                              | 12.1                                                                               | 12.1                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 10th %ile Green (s)     | 0.0                                                                               | 33.0                                                                              | 33.0                                                                              | 33.0                                                                              | 8.5                                                                               | 8.5                                                                               | 8.5                                                                                | 8.5                                                                                 |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 65  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 75.3  
 70th %ile Actuated Cycle: 69.9  
 50th %ile Actuated Cycle: 66.7  
 30th %ile Actuated Cycle: 63.7  
 10th %ile Actuated Cycle: 49.5

Santa Cruz DRP Study  
11: Ocean Street & Water Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 167                                                                               | 303                                                                               | 136                                                                               | 459                                                                               | 255                                                                               | 78                                                                                | 466                                                                                | 40                                                                                  | 175                                                                                 | 620                                                                                 | 391                                                                                 |
| Future Volume (vph)  | 167                                                                               | 303                                                                               | 136                                                                               | 459                                                                               | 255                                                                               | 78                                                                                | 466                                                                                | 40                                                                                  | 175                                                                                 | 620                                                                                 | 391                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                  | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 17.0                                                                              | 31.0                                                                              | 26.0                                                                              | 40.0                                                                              | 40.0                                                                              | 18.0                                                                              | 34.0                                                                               | 34.0                                                                                | 29.0                                                                                | 45.0                                                                                | 45.0                                                                                |
| Total Split (%)      | 14.2%                                                                             | 25.8%                                                                             | 21.7%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 15.0%                                                                             | 28.3%                                                                              | 28.3%                                                                               | 24.2%                                                                               | 37.5%                                                                               | 37.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Act Effct Green (s)  | 10.2                                                                              | 17.4                                                                              | 12.8                                                                              | 20.1                                                                              | 20.1                                                                              | 9.8                                                                               | 20.5                                                                               | 20.5                                                                                | 14.8                                                                                | 28.6                                                                                | 28.6                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.21                                                                              | 0.16                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                              | 0.25                                                                               | 0.25                                                                                | 0.18                                                                                | 0.35                                                                                | 0.35                                                                                |
| v/c Ratio            | 0.43                                                                              | 0.52                                                                              | 0.53                                                                              | 0.59                                                                              | 0.46                                                                              | 0.41                                                                              | 0.58                                                                               | 0.08                                                                                | 0.59                                                                                | 0.55                                                                                | 0.52                                                                                |
| Control Delay        | 41.2                                                                              | 33.0                                                                              | 43.2                                                                              | 32.2                                                                              | 6.8                                                                               | 45.1                                                                              | 31.5                                                                               | 0.3                                                                                 | 42.3                                                                                | 25.9                                                                                | 5.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 41.2                                                                              | 33.0                                                                              | 43.2                                                                              | 32.2                                                                              | 6.8                                                                               | 45.1                                                                              | 31.5                                                                               | 0.3                                                                                 | 42.3                                                                                | 25.9                                                                                | 5.5                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 35.7                                                                              |                                                                                   | 26.3                                                                              |                                                                                   |                                                                                   | 31.2                                                                               |                                                                                     |                                                                                     | 21.6                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

**Intersection Summary**

Cycle Length: 120

Actuated Cycle Length: 82.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 53.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Ocean Street & Water Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4  |
| 26 s                                                                                   | 31 s                                                                                   | 18 s                                                                                   | 45 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 17 s                                                                                   | 40 s                                                                                   | 29 s                                                                                   | 34 s                                                                                     |

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Existing + Project  
AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 17.0                                                                              | 31.0                                                                              | 26.0                                                                              | 40.0                                                                              | 40.0                                                                              | 18.0                                                                              | 34.0                                                                                | 34.0                                                                                | 29.0                                                                                | 45.0                                                                                | 45.0                                                                                |
| Total Split (%)         | 14.2%                                                                             | 25.8%                                                                             | 21.7%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 15.0%                                                                             | 28.3%                                                                               | 28.3%                                                                               | 24.2%                                                                               | 37.5%                                                                               | 37.5%                                                                               |
| Maximum Green (s)       | 13.0                                                                              | 27.0                                                                              | 22.0                                                                              | 36.0                                                                              | 36.0                                                                              | 14.0                                                                              | 30.0                                                                                | 30.0                                                                                | 25.0                                                                                | 41.0                                                                                | 41.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                                | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 13.0                                                                              | 23.6                                                                              | 19.8                                                                              | 30.4                                                                              | 30.4                                                                              | 14.0                                                                              | 30.5                                                                                | 30.5                                                                                | 23.2                                                                                | 39.7                                                                                | 39.7                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Max                                                                               | Hold                                                                                | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 11.7                                                                              | 20.0                                                                              | 15.2                                                                              | 23.5                                                                              | 23.5                                                                              | 11.5                                                                              | 24.7                                                                                | 24.7                                                                                | 17.8                                                                                | 31.0                                                                                | 31.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                                | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 10.0                                                                              | 16.8                                                                              | 12.4                                                                              | 19.2                                                                              | 19.2                                                                              | 9.6                                                                               | 20.4                                                                                | 20.4                                                                                | 14.4                                                                                | 25.2                                                                                | 25.2                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                                | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 8.7                                                                               | 15.0                                                                              | 10.2                                                                              | 16.5                                                                              | 16.5                                                                              | 8.0                                                                               | 17.4                                                                                | 17.4                                                                                | 11.8                                                                                | 21.2                                                                                | 21.2                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                                | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 7.0                                                                               | 11.6                                                                              | 7.6                                                                               | 12.2                                                                              | 12.2                                                                              | 0.0                                                                               | 11.3                                                                                | 11.3                                                                                | 8.6                                                                                 | 23.9                                                                                | 23.9                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                               | Gap                                                                               | Skip                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Hold                                                                                |

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 82.5  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 113.1  
 70th %ile Actuated Cycle: 93.7  
 50th %ile Actuated Cycle: 80  
 30th %ile Actuated Cycle: 70.4  
 10th %ile Actuated Cycle: 55.1

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

APPENDIX F

Existing + Project

AM Peak

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 213                                                                               | 1529                                                                              | 278                                                                               | 1394                                                                              | 515                                                                               | 27                                                                                | 166                                                                                 | 203                                                                                 | 412                                                                                 | 161                                                                                 | 185                                                                                 |
| Future Volume (vph)  | 213                                                                               | 1529                                                                              | 278                                                                               | 1394                                                                              | 515                                                                               | 27                                                                                | 166                                                                                 | 203                                                                                 | 412                                                                                 | 161                                                                                 | 185                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                  | Perm                                                                                | Split                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                   | 4                                                                                   | 8                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 41.0                                                                              | 94.0                                                                              | 29.0                                                                              | 82.0                                                                              | 82.0                                                                              | 34.0                                                                              | 34.0                                                                                | 34.0                                                                                | 43.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)      | 20.5%                                                                             | 47.0%                                                                             | 14.5%                                                                             | 41.0%                                                                             | 41.0%                                                                             | 17.0%                                                                             | 17.0%                                                                               | 17.0%                                                                               | 21.5%                                                                               | 21.5%                                                                               | 21.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 29.4                                                                              | 90.0                                                                              | 21.4                                                                              | 82.1                                                                              | 82.1                                                                              | 30.0                                                                              | 30.0                                                                                | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.46                                                                              | 0.11                                                                              | 0.42                                                                              | 0.42                                                                              | 0.15                                                                              | 0.15                                                                                | 0.15                                                                                | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                |
| v/c Ratio            | 0.84                                                                              | 0.71                                                                              | 0.78                                                                              | 0.69                                                                              | 0.67                                                                              | 0.11                                                                              | 0.62                                                                                | 0.40                                                                                | 0.72                                                                                | 0.49                                                                                | 0.43                                                                                |
| Control Delay        | 107.6                                                                             | 45.0                                                                              | 100.5                                                                             | 49.6                                                                              | 26.9                                                                              | 74.4                                                                              | 89.2                                                                                | 30.9                                                                                | 82.0                                                                                | 75.9                                                                                | 10.5                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 107.6                                                                             | 45.0                                                                              | 100.5                                                                             | 49.6                                                                              | 26.9                                                                              | 74.4                                                                              | 89.2                                                                                | 30.9                                                                                | 82.0                                                                                | 75.9                                                                                | 10.5                                                                                |
| LOS                  | F                                                                                 | D                                                                                 | F                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | F                                                                                   | C                                                                                   | F                                                                                   | E                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 52.4                                                                              |                                                                                   | 50.7                                                                              |                                                                                   |                                                                                   | 58.3                                                                                |                                                                                     |                                                                                     | 63.2                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |

Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 196.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 53.7

Intersection LOS: D

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: Highway 9 & Highway 1

|                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |  Ø8 |
| 29 s                                                                                   | 94 s                                                                                   | 34 s                                                                                    | 43 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                         |                                                                                          |
| 41 s                                                                                   | 82 s                                                                                   |                                                                                         |                                                                                          |

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

**APPENDIX F**

Existing + Project

AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                  |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 41.0                                                                              | 94.0                                                                              | 29.0                                                                              | 82.0                                                                              | 82.0                                                                              | 34.0                                                                              | 34.0                                                                               | 34.0                                                                                | 43.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)         | 20.5%                                                                             | 47.0%                                                                             | 14.5%                                                                             | 41.0%                                                                             | 41.0%                                                                             | 17.0%                                                                             | 17.0%                                                                              | 17.0%                                                                               | 21.5%                                                                               | 21.5%                                                                               | 21.5%                                                                               |
| Maximum Green (s)       | 37.0                                                                              | 90.0                                                                              | 25.0                                                                              | 78.0                                                                              | 78.0                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 37.0                                                                              | 90.0                                                                              | 25.0                                                                              | 78.0                                                                              | 78.0                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 33.9                                                                              | 90.0                                                                              | 24.4                                                                              | 80.5                                                                              | 80.5                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 29.9                                                                              | 90.0                                                                              | 22.0                                                                              | 82.1                                                                              | 82.1                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 26.0                                                                              | 90.0                                                                              | 19.6                                                                              | 83.6                                                                              | 83.6                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 20.5                                                                              | 90.0                                                                              | 16.4                                                                              | 85.9                                                                              | 85.9                                                                              | 30.0                                                                              | 30.0                                                                               | 30.0                                                                                | 39.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |

**Intersection Summary**

Cycle Length: 200

Actuated Cycle Length: 196.5

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 200

70th %ile Actuated Cycle: 199.4

50th %ile Actuated Cycle: 197

30th %ile Actuated Cycle: 194.6

10th %ile Actuated Cycle: 191.4

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 1428                                                                              | 392                                                                               | 367                                                                               | 95                                                                                | 294                                                                               | 58                                                                                | 209                                                                                | 1471                                                                                |
| Future Volume (vph)  | 1428                                                                              | 392                                                                               | 367                                                                               | 95                                                                                | 294                                                                               | 58                                                                                | 209                                                                                | 1471                                                                                |
| Turn Type            | Split                                                                             | NA                                                                                | NA                                                                                | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | pm+ov                                                                               |
| Protected Phases     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 4 6                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 43.0                                                                              | 43.0                                                                              | 26.0                                                                              | 44.0                                                                              | 32.0                                                                              | 49.0                                                                              | 37.0                                                                               | 43.0                                                                                |
| Total Split (%)      | 28.7%                                                                             | 28.7%                                                                             | 17.3%                                                                             | 29.3%                                                                             | 21.3%                                                                             | 32.7%                                                                             | 24.7%                                                                              | 28.7%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Act Effct Green (s)  | 39.2                                                                              | 39.2                                                                              | 19.8                                                                              | 12.4                                                                              | 36.0                                                                              | 9.6                                                                               | 30.9                                                                               | 74.2                                                                                |
| Actuated g/C Ratio   | 0.33                                                                              | 0.33                                                                              | 0.17                                                                              | 0.10                                                                              | 0.30                                                                              | 0.08                                                                              | 0.26                                                                               | 0.63                                                                                |
| v/c Ratio            | 1.50                                                                              | 1.44dl                                                                            | 0.77                                                                              | 0.57                                                                              | 0.33                                                                              | 0.44                                                                              | 0.25                                                                               | 0.82                                                                                |
| Control Delay        | 266.2                                                                             | 136.1                                                                             | 56.8                                                                              | 63.7                                                                              | 33.7                                                                              | 63.2                                                                              | 36.2                                                                               | 13.6                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay          | 266.2                                                                             | 136.1                                                                             | 56.8                                                                              | 63.7                                                                              | 33.7                                                                              | 63.2                                                                              | 36.2                                                                               | 13.6                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | C                                                                                 | E                                                                                 | D                                                                                  | B                                                                                   |
| Approach Delay       |                                                                                   | 185.7                                                                             | 56.8                                                                              |                                                                                   | 40.6                                                                              |                                                                                   | 17.9                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 | E                                                                                 |                                                                                   | D                                                                                 |                                                                                   | B                                                                                  |                                                                                     |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 118.4  
 Natural Cycle: 120  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.50  
 Intersection Signal Delay: 94.6  
 Intersection Capacity Utilization 77.9%  
 Analysis Period (min) 15  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 13: Chestnut Street & Mission Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø6 |  Ø4 |  Ø3 |
| 26 s                                                                                   | 43 s                                                                                   | 37 s                                                                                   | 44 s                                                                                     |
|                                                                                        |                                                                                        |  Ø7 |  Ø8 |
|                                                                                        |                                                                                        | 49 s                                                                                   | 32 s                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
AM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Protected Phases        | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 43.0                                                                              | 43.0                                                                              | 26.0                                                                              | 44.0                                                                              | 32.0                                                                              | 49.0                                                                              | 37.0                                                                               | 43.0                                                                                |
| Total Split (%)         | 28.7%                                                                             | 28.7%                                                                             | 17.3%                                                                             | 29.3%                                                                             | 21.3%                                                                             | 32.7%                                                                             | 24.7%                                                                              | 28.7%                                                                               |
| Maximum Green (s)       | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 40.0                                                                              | 28.0                                                                              | 45.0                                                                              | 33.0                                                                               | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 17.4                                                                              | 37.0                                                                              | 13.4                                                                              | 33.0                                                                               | 39.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 70th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 22.0                                                                              | 14.4                                                                              | 36.2                                                                              | 11.2                                                                              | 33.0                                                                               | 39.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 50th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 21.4                                                                              | 12.5                                                                              | 35.8                                                                              | 9.7                                                                               | 33.0                                                                               | 39.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                | Max                                                                                 |
| 30th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 19.0                                                                              | 10.7                                                                              | 34.1                                                                              | 8.3                                                                               | 31.7                                                                               | 39.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                | Max                                                                                 |
| 10th %ile Green (s)     | 39.0                                                                              | 39.0                                                                              | 14.9                                                                              | 7.8                                                                               | 36.1                                                                              | 0.0                                                                               | 24.3                                                                               | 39.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Skip                                                                              | Gap                                                                                | Max                                                                                 |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 118.4  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 127.4  
 70th %ile Actuated Cycle: 124.4  
 50th %ile Actuated Cycle: 121.9  
 30th %ile Actuated Cycle: 116.4  
 10th %ile Actuated Cycle: 102

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing + Project  
PM Peak

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 108                                                                               | 638                                                                               | 228                                                                               | 379                                                                               | 119                                                                               | 8                                                                                 | 170                                                                                | 229                                                                                 | 126                                                                                 | 327                                                                                 | 174                                                                                 |
| Future Volume (vph)  | 108                                                                               | 638                                                                               | 228                                                                               | 379                                                                               | 119                                                                               | 8                                                                                 | 170                                                                                | 229                                                                                 | 126                                                                                 | 327                                                                                 | 174                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                  | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 29.0                                                                              | 18.0                                                                              | 27.0                                                                              | 27.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 13.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 36.3%                                                                             | 22.5%                                                                             | 33.8%                                                                             | 33.8%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 16.3%                                                                               | 31.3%                                                                               | 31.3%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 16.0                                                                              | 26.0                                                                              | 13.1                                                                              | 23.0                                                                              | 23.0                                                                              | 4.0                                                                               | 12.4                                                                               | 12.4                                                                                | 8.6                                                                                 | 23.5                                                                                | 23.5                                                                                |
| Actuated g/C Ratio   | 0.21                                                                              | 0.34                                                                              | 0.17                                                                              | 0.30                                                                              | 0.30                                                                              | 0.05                                                                              | 0.16                                                                               | 0.16                                                                                | 0.11                                                                                | 0.31                                                                                | 0.31                                                                                |
| v/c Ratio            | 0.31                                                                              | 0.58                                                                              | 0.78                                                                              | 0.71                                                                              | 0.21                                                                              | 0.09                                                                              | 0.59                                                                               | 0.52                                                                                | 0.68                                                                                | 0.59                                                                                | 0.30                                                                                |
| Control Delay        | 29.2                                                                              | 23.7                                                                              | 49.8                                                                              | 32.7                                                                              | 2.3                                                                               | 38.2                                                                              | 37.9                                                                               | 8.5                                                                                 | 52.6                                                                                | 27.8                                                                                | 5.1                                                                                 |
| Queue Delay          | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 29.2                                                                              | 25.3                                                                              | 49.8                                                                              | 32.7                                                                              | 2.3                                                                               | 38.2                                                                              | 37.9                                                                               | 8.5                                                                                 | 52.6                                                                                | 27.8                                                                                | 5.1                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | D                                                                                  | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 25.8                                                                              |                                                                                   | 33.1                                                                              |                                                                                   |                                                                                   | 21.4                                                                               |                                                                                     |                                                                                     | 26.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 76.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 27.4

Intersection LOS: C

Intersection Capacity Utilization 65.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Front Street & Laurel Street

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 18 s                                                                                | 29 s                                                                                | 8 s                                                                                 | 25 s                                                                                  |
|  |  |  |  |
| 20 s                                                                                | 27 s                                                                                | 13 s                                                                                | 20 s                                                                                  |

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Existing + Project  
PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 29.0                                                                              | 18.0                                                                              | 27.0                                                                              | 27.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 13.0                                                                                | 25.0                                                                                | 25.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 36.3%                                                                             | 22.5%                                                                             | 33.8%                                                                             | 33.8%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 16.3%                                                                               | 31.3%                                                                               | 31.3%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 9.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 9.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 15.6                                                                               | 15.6                                                                                | 9.0                                                                                 | 28.6                                                                                | 28.6                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 50th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 14.0                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 12.5                                                                               | 12.5                                                                                | 9.0                                                                                 | 25.5                                                                                | 25.5                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 30th %ile Green (s)     | 16.0                                                                              | 25.4                                                                              | 13.6                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 10.6                                                                               | 10.6                                                                                | 9.0                                                                                 | 23.6                                                                                | 23.6                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 10th %ile Green (s)     | 16.0                                                                              | 28.8                                                                              | 10.2                                                                              | 23.0                                                                              | 23.0                                                                              | 0.0                                                                               | 7.8                                                                                | 7.8                                                                                 | 7.2                                                                                 | 19.0                                                                                | 19.0                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Hold                                                                                |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 76.1

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 79.6

50th %ile Actuated Cycle: 76.5

30th %ile Actuated Cycle: 74.6

10th %ile Actuated Cycle: 70

# APPENDIX F

Existing + Project

PM Peak

## Santa Cruz DRP Study 2: Pacific Avenue & Laurel Street

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 55                                                                                | 660                                                                               | 41                                                                                | 470                                                                               | 41                                                                                | 79                                                                                | 57                                                                                 | 59                                                                                  |
| Future Volume (vph)  | 55                                                                                | 660                                                                               | 41                                                                                | 470                                                                               | 41                                                                                | 79                                                                                | 57                                                                                 | 59                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                               | NA                                                                                  |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                  | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Act Effct Green (s)  | 7.9                                                                               | 37.0                                                                              | 7.2                                                                               | 36.4                                                                              | 16.2                                                                              | 16.2                                                                              |                                                                                    | 16.2                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.54                                                                              | 0.11                                                                              | 0.54                                                                              | 0.24                                                                              | 0.24                                                                              |                                                                                    | 0.24                                                                                |
| v/c Ratio            | 0.31                                                                              | 0.71                                                                              | 0.23                                                                              | 0.60                                                                              | 0.16                                                                              | 0.32                                                                              |                                                                                    | 0.46                                                                                |
| Control Delay        | 33.3                                                                              | 17.9                                                                              | 32.5                                                                              | 15.2                                                                              | 24.9                                                                              | 19.9                                                                              |                                                                                    | 26.0                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.4                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Delay          | 33.3                                                                              | 17.9                                                                              | 32.5                                                                              | 20.6                                                                              | 24.9                                                                              | 19.9                                                                              |                                                                                    | 26.0                                                                                |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 |                                                                                    | C                                                                                   |
| Approach Delay       |                                                                                   | 19.0                                                                              |                                                                                   | 21.4                                                                              |                                                                                   | 21.1                                                                              |                                                                                    | 26.0                                                                                |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 |                                                                                    | C                                                                                   |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 68

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.8

Intersection LOS: C

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Pacific Avenue & Laurel Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 10.9                                                                              | 37.4                                                                              | 9.5                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 70th %ile Green (s)     | 9.1                                                                               | 37.0                                                                              | 8.1                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 50th %ile Green (s)     | 7.9                                                                               | 36.8                                                                              | 7.1                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 30th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 30th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |
| 10th %ile Green (s)     | 0.0                                                                               | 36.0                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | MaxR                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                |

**Intersection Summary**

Cycle Length: 80

Actuated Cycle Length: 68

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 74.9

70th %ile Actuated Cycle: 73.1

50th %ile Actuated Cycle: 71.9

30th %ile Actuated Cycle: 60

10th %ile Actuated Cycle: 60

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                      |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |  |
| Traffic Volume (vph) | 116                                                                               | 61                                                                                | 56                                                                                | 425                                                                               | 657                                                                               |
| Future Volume (vph)  | 116                                                                               | 61                                                                                | 56                                                                                | 425                                                                               | 657                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 25.0                                                                              | 25.0                                                                              | 21.0                                                                              | 60.0                                                                              | 39.0                                                                              |
| Total Split (%)      | 29.4%                                                                             | 29.4%                                                                             | 24.7%                                                                             | 70.6%                                                                             | 45.9%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Act Effect Green (s) | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| Actuated g/C Ratio   | 0.25                                                                              | 0.25                                                                              | 0.20                                                                              | 0.66                                                                              | 0.41                                                                              |
| v/c Ratio            | 0.27                                                                              | 0.15                                                                              | 0.17                                                                              | 0.37                                                                              | 0.59                                                                              |
| Control Delay        | 27.9                                                                              | 8.0                                                                               | 29.7                                                                              | 7.6                                                                               | 20.4                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.8                                                                               | 0.0                                                                               |
| Total Delay          | 27.9                                                                              | 8.0                                                                               | 29.7                                                                              | 10.4                                                                              | 20.4                                                                              |
| LOS                  | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 |
| Approach Delay       | 21.0                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 20.4                                                                              |
| Approach LOS         | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |

## Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 42.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Front Street &amp; Cathcart Street



Santa Cruz DRP Study  
3: Front Street & Cathcart Street

|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 25.0                                                                              | 25.0                                                                              | 21.0                                                                              | 60.0                                                                              | 39.0                                                                              |
| Total Split (%)         | 29.4%                                                                             | 29.4%                                                                             | 24.7%                                                                             | 70.6%                                                                             | 45.9%                                                                             |
| Maximum Green (s)       | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 70th %ile Green (s)     | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 50th %ile Green (s)     | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 30th %ile Green (s)     | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 10th %ile Green (s)     | 21.0                                                                              | 21.0                                                                              | 17.0                                                                              | 56.0                                                                              | 35.0                                                                              |
| 10th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |

## Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 85

70th %ile Actuated Cycle: 85

50th %ile Actuated Cycle: 85

30th %ile Actuated Cycle: 85

10th %ile Actuated Cycle: 85

## Santa Cruz DRP Study

## 4: Front Street &amp; Metro Station Access North

|                      |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |
| Traffic Volume (vph) | 17                                                                                | 5                                                                                 | 442                                                                               | 664                                                                               |
| Future Volume (vph)  | 17                                                                                | 5                                                                                 | 442                                                                               | 664                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 22.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              |
| Total Split (%)      | 36.7%                                                                             | 63.3%                                                                             | 63.3%                                                                             | 63.3%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effect Green (s) | 6.9                                                                               | 52.8                                                                              | 52.8                                                                              | 52.8                                                                              |
| Actuated g/C Ratio   | 0.12                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| v/c Ratio            | 0.18                                                                              | 0.01                                                                              | 0.26                                                                              | 0.41                                                                              |
| Control Delay        | 24.9                                                                              | 1.4                                                                               | 1.4                                                                               | 2.1                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               |
| Total Delay          | 24.9                                                                              | 1.4                                                                               | 1.4                                                                               | 2.1                                                                               |
| LOS                  | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |
| Approach Delay       | 24.9                                                                              |                                                                                   | 1.4                                                                               | 2.1                                                                               |
| Approach LOS         | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |

## Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 2.3

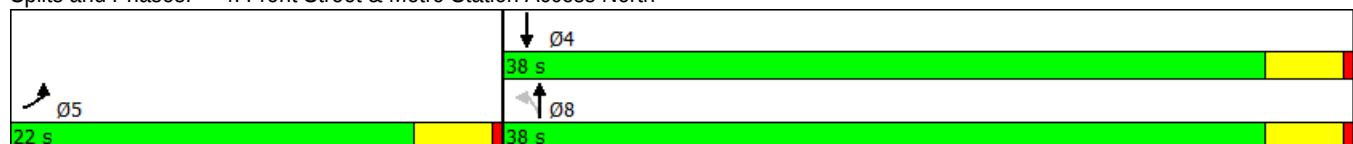
Intersection LOS: A

Intersection Capacity Utilization 46.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Front Street &amp; Metro Station Access North



Santa Cruz DRP Study  
4: Front Street & Metro Station Access North

|                         |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 22.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              |
| Total Split (%)         | 36.7%                                                                             | 63.3%                                                                             | 63.3%                                                                             | 63.3%                                                                             |
| Maximum Green (s)       | 18.0                                                                              | 34.0                                                                              | 34.0                                                                              | 34.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 9.9                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 90th %ile Term Code     | Gap                                                                               | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 70th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 70th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 50th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 50th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 30th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 30th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 10th %ile Green (s)     | 0.0                                                                               | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              |
| 10th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 55.8  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 66.9  
 70th %ile Actuated Cycle: 53  
 50th %ile Actuated Cycle: 53  
 30th %ile Actuated Cycle: 53  
 10th %ile Actuated Cycle: 53

# APPENDIX F

Existing + Project

PM Peak

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

|                      |  |  |  |  |  |  |   |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 152                                                                               | 629                                                                               | 110                                                                               | 108                                                                               | 49                                                                                | 630                                                                               | 33                                                                                  | 174                                                                                 |
| Future Volume (vph)  | 152                                                                               | 629                                                                               | 110                                                                               | 108                                                                               | 49                                                                                | 630                                                                               | 33                                                                                  | 174                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 25.0                                                                              | 42.0                                                                              | 42.0                                                                              | 20.0                                                                              | 20.0                                                                              | 37.0                                                                              | 28.0                                                                                | 28.0                                                                                |
| Total Split (%)      | 27.8%                                                                             | 46.7%                                                                             | 46.7%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 41.1%                                                                             | 31.1%                                                                               | 31.1%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 12.6                                                                              | 37.4                                                                              | 37.4                                                                              | 10.6                                                                              | 10.6                                                                              | 33.1                                                                              | 24.1                                                                                | 24.1                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.46                                                                              | 0.46                                                                              | 0.13                                                                              | 0.13                                                                              | 0.40                                                                              | 0.29                                                                                | 0.29                                                                                |
| v/c Ratio            | 0.59                                                                              | 0.41                                                                              | 0.18                                                                              | 0.50                                                                              | 0.23                                                                              | 0.47                                                                              | 0.38                                                                                | 0.32                                                                                |
| Control Delay        | 41.1                                                                              | 17.0                                                                              | 9.7                                                                               | 41.0                                                                              | 34.2                                                                              | 19.8                                                                              | 26.5                                                                                | 8.0                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 41.1                                                                              | 17.0                                                                              | 9.7                                                                               | 41.0                                                                              | 34.2                                                                              | 19.8                                                                              | 26.5                                                                                | 8.0                                                                                 |
| LOS                  | D                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 23.6                                                                              | 17.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | B                                                                                   |                                                                                     |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 20.9

Intersection LOS: C

Intersection Capacity Utilization 46.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Pacific Street & Front Street & Mission Street/Water Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |                                                                                          |
| 20 s                                                                                   | 42 s                                                                                   |                                                                                          |
|  Ø5 |  Ø6 |  Ø8 |
| 25 s                                                                                   | 37 s                                                                                   | 28 s                                                                                     |

## Santa Cruz DRP Study

## 7: Pacific Street &amp; Front Street &amp; Mission Street/Water Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL2                                                                              | WBL                                                                               | WBT                                                                               | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 25.0                                                                              | 42.0                                                                              | 42.0                                                                              | 20.0                                                                              | 20.0                                                                              | 37.0                                                                              | 28.0                                                                                | 28.0                                                                                |
| Total Split (%)         | 27.8%                                                                             | 46.7%                                                                             | 46.7%                                                                             | 22.2%                                                                             | 22.2%                                                                             | 41.1%                                                                             | 31.1%                                                                               | 31.1%                                                                               |
| Maximum Green (s)       | 21.0                                                                              | 38.0                                                                              | 38.0                                                                              | 16.0                                                                              | 16.0                                                                              | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 18.0                                                                              | 36.0                                                                              | 36.0                                                                              | 15.0                                                                              | 15.0                                                                              | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 14.7                                                                              | 35.4                                                                              | 35.4                                                                              | 12.3                                                                              | 12.3                                                                              | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 12.6                                                                              | 35.1                                                                              | 35.1                                                                              | 10.5                                                                              | 10.5                                                                              | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 10.6                                                                              | 34.7                                                                              | 34.7                                                                              | 8.9                                                                               | 8.9                                                                               | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 7.9                                                                               | 44.9                                                                              | 44.9                                                                              | 0.0                                                                               | 0.0                                                                               | 33.0                                                                              | 24.0                                                                                | 24.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 87

70th %ile Actuated Cycle: 83.7

50th %ile Actuated Cycle: 81.6

30th %ile Actuated Cycle: 79.6

10th %ile Actuated Cycle: 76.9

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Existing + Project  
PM Peak

|                      | →     | ↖     | ←     | ↗     | ↘     | ↑     | ↙     | ↓     |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group           | EBT   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
| Lane Configurations  | ↕↕    | ↖     | ↗     | ↗     |       | ↕↕    | ↖     | ↗     |
| Traffic Volume (vph) | 111   | 427   | 94    | 36    | 10    | 318   | 79    | 406   |
| Future Volume (vph)  | 111   | 427   | 94    | 36    | 10    | 318   | 79    | 406   |
| Turn Type            | NA    | Split | NA    | Perm  | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 2     | 6     | 6     |       |       | 8     |       | 4     |
| Permitted Phases     |       |       |       | 6     | 8     |       | 4     |       |
| Detector Phase       | 2     | 6     | 6     | 6     | 8     | 8     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 36.0  | 36.0  | 36.0  | 44.0  | 44.0  | 44.0  | 44.0  |
| Total Split (%)      | 20.0% | 36.0% | 36.0% | 36.0% | 44.0% | 44.0% | 44.0% | 44.0% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   |
| Lead/Lag             | Lag   | Lead  | Lead  | Lead  |       |       |       |       |
| Lead-Lag Optimize?   | Yes   | Yes   | Yes   | Yes   |       |       |       |       |
| Recall Mode          | None  | Max   | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)  | 10.0  | 32.6  | 32.6  | 32.6  |       | 26.4  | 26.4  | 26.4  |
| Actuated g/C Ratio   | 0.12  | 0.40  | 0.40  | 0.40  |       | 0.33  | 0.33  | 0.33  |
| v/c Ratio            | 0.49  | 0.39  | 0.40  | 0.06  |       | 0.51  | 0.43  | 0.79  |
| Control Delay        | 34.3  | 22.2  | 22.3  | 4.1   |       | 15.5  | 28.8  | 35.0  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 34.3  | 22.2  | 22.3  | 4.1   |       | 15.5  | 28.8  | 35.0  |
| LOS                  | C     | C     | C     | A     |       | B     | C     | C     |
| Approach Delay       | 34.3  |       | 21.1  |       |       | 15.5  |       | 34.0  |
| Approach LOS         | C     |       | C     |       |       | B     |       | C     |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 81.2  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 24.5  
 Intersection Capacity Utilization 73.2%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 8: Front Street & Soquel Avenue

|      |      |      |
|------|------|------|
| ↖ Ø6 | ↗ Ø2 | ↓ Ø4 |
| 36 s | 20 s | 44 s |
|      |      | ↑ Ø8 |
|      |      | 44 s |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Existing + Project  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Protected Phases        | 2                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              | 44.0                                                                              | 44.0                                                                              | 44.0                                                                               | 44.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 36.0%                                                                             | 36.0%                                                                             | 36.0%                                                                             | 44.0%                                                                             | 44.0%                                                                             | 44.0%                                                                              | 44.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 40.0                                                                              | 40.0                                                                              | 40.0                                                                               | 40.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lead/Lag                | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lead                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| 90th %ile Green (s)     | 13.9                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 40.0                                                                              | 40.0                                                                              | 40.0                                                                               | 40.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Max                                                                                | Max                                                                                 |
| 70th %ile Green (s)     | 11.4                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 31.9                                                                              | 31.9                                                                              | 31.9                                                                               | 31.9                                                                                |
| 70th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 9.9                                                                               | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 26.2                                                                              | 26.2                                                                              | 26.2                                                                               | 26.2                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 30th %ile Green (s)     | 8.5                                                                               | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 21.1                                                                              | 21.1                                                                              | 21.1                                                                               | 21.1                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |
| 10th %ile Green (s)     | 6.9                                                                               | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                               | 16.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Gap                                                                                | Gap                                                                                 |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 81.2  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 97.9  
 70th %ile Actuated Cycle: 87.3  
 50th %ile Actuated Cycle: 80.1  
 30th %ile Actuated Cycle: 73.6  
 10th %ile Actuated Cycle: 66.9

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Existing + Project  
PM Peak

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 346                                                                               | 734                                                                               | 112                                                                               | 586                                                                               | 227                                                                               | 120                                                                               | 553                                                                               | 98                                                                                  | 290                                                                                 | 856                                                                                 | 387                                                                                 |
| Future Volume (vph)  | 346                                                                               | 734                                                                               | 112                                                                               | 586                                                                               | 227                                                                               | 120                                                                               | 553                                                                               | 98                                                                                  | 290                                                                                 | 856                                                                                 | 387                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 22.0                                                                              | 42.0                                                                              | 17.0                                                                              | 37.0                                                                              | 37.0                                                                              | 18.0                                                                              | 29.0                                                                              | 29.0                                                                                | 32.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)      | 18.3%                                                                             | 35.0%                                                                             | 14.2%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 15.0%                                                                             | 24.2%                                                                             | 24.2%                                                                               | 26.7%                                                                               | 35.8%                                                                               | 35.8%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Act Effct Green (s)  | 15.8                                                                              | 32.8                                                                              | 11.3                                                                              | 28.3                                                                              | 28.3                                                                              | 11.8                                                                              | 23.7                                                                              | 23.7                                                                                | 22.7                                                                                | 34.6                                                                                | 34.6                                                                                |
| Actuated g/C Ratio   | 0.15                                                                              | 0.31                                                                              | 0.11                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.22                                                                              | 0.22                                                                                | 0.21                                                                                | 0.32                                                                                | 0.32                                                                                |
| v/c Ratio            | 0.71                                                                              | 0.81                                                                              | 0.62                                                                              | 0.65                                                                              | 0.39                                                                              | 0.63                                                                              | 0.73                                                                              | 0.21                                                                                | 0.80                                                                                | 0.76                                                                                | 0.54                                                                                |
| Control Delay        | 53.9                                                                              | 41.4                                                                              | 63.9                                                                              | 39.4                                                                              | 6.4                                                                               | 63.2                                                                              | 46.5                                                                              | 2.4                                                                                 | 57.8                                                                                | 38.5                                                                                | 8.8                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 53.9                                                                              | 41.4                                                                              | 63.9                                                                              | 39.4                                                                              | 6.4                                                                               | 63.2                                                                              | 46.5                                                                              | 2.4                                                                                 | 57.8                                                                                | 38.5                                                                                | 8.8                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 45.0                                                                              |                                                                                   | 34.3                                                                              |                                                                                   |                                                                                   | 43.5                                                                              |                                                                                     |                                                                                     | 34.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 107

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 38.9

Intersection LOS: D

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Ocean Street & Water Street

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 17 s                                                                                | 42 s                                                                                | 18 s                                                                                | 43 s                                                                                  |
|  |  |  |  |
| 22 s                                                                                | 37 s                                                                                | 32 s                                                                                | 29 s                                                                                  |

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Existing + Project  
PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 22.0                                                                              | 42.0                                                                              | 17.0                                                                              | 37.0                                                                              | 37.0                                                                              | 18.0                                                                              | 29.0                                                                               | 29.0                                                                                | 32.0                                                                                | 43.0                                                                                | 43.0                                                                                |
| Total Split (%)         | 18.3%                                                                             | 35.0%                                                                             | 14.2%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 15.0%                                                                             | 24.2%                                                                              | 24.2%                                                                               | 26.7%                                                                               | 35.8%                                                                               | 35.8%                                                                               |
| Maximum Green (s)       | 18.0                                                                              | 38.0                                                                              | 13.0                                                                              | 33.0                                                                              | 33.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 13.0                                                                              | 33.0                                                                              | 33.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 13.0                                                                              | 33.0                                                                              | 33.0                                                                              | 14.0                                                                              | 25.0                                                                               | 25.0                                                                                | 28.0                                                                                | 39.0                                                                                | 39.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 17.5                                                                              | 36.2                                                                              | 12.9                                                                              | 31.6                                                                              | 31.6                                                                              | 13.4                                                                              | 27.3                                                                               | 27.3                                                                                | 25.1                                                                                | 39.0                                                                                | 39.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Max                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 14.6                                                                              | 30.4                                                                              | 10.4                                                                              | 26.2                                                                              | 26.2                                                                              | 10.8                                                                              | 23.4                                                                               | 23.4                                                                                | 20.0                                                                                | 32.6                                                                                | 32.6                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.0                                                                              | 22.3                                                                              | 7.4                                                                               | 18.7                                                                              | 18.7                                                                              | 7.6                                                                               | 17.5                                                                               | 17.5                                                                                | 14.0                                                                                | 23.9                                                                                | 23.9                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Hold                                                                               | Hold                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 107  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 120  
 70th %ile Actuated Cycle: 120  
 50th %ile Actuated Cycle: 117.5  
 30th %ile Actuated Cycle: 100.2  
 10th %ile Actuated Cycle: 77.2

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

APPENDIX F

Existing + Project

PM Peak

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 228                                                                               | 1327                                                                              | 328                                                                               | 1277                                                                              | 472                                                                               | 102                                                                               | 253                                                                                 | 447                                                                                 | 648                                                                                 | 316                                                                                 | 249                                                                                 |
| Future Volume (vph)  | 228                                                                               | 1327                                                                              | 328                                                                               | 1277                                                                              | 472                                                                               | 102                                                                               | 253                                                                                 | 447                                                                                 | 648                                                                                 | 316                                                                                 | 249                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                  | Perm                                                                                | Split                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                   | 4                                                                                   | 8                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 40.0                                                                              | 77.0                                                                              | 30.0                                                                              | 67.0                                                                              | 67.0                                                                              | 42.0                                                                              | 42.0                                                                                | 42.0                                                                                | 51.0                                                                                | 51.0                                                                                | 51.0                                                                                |
| Total Split (%)      | 20.0%                                                                             | 38.5%                                                                             | 15.0%                                                                             | 33.5%                                                                             | 33.5%                                                                             | 21.0%                                                                             | 21.0%                                                                               | 21.0%                                                                               | 25.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 31.0                                                                              | 73.0                                                                              | 24.0                                                                              | 66.0                                                                              | 66.0                                                                              | 38.0                                                                              | 38.0                                                                                | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| Actuated g/C Ratio   | 0.16                                                                              | 0.37                                                                              | 0.12                                                                              | 0.33                                                                              | 0.33                                                                              | 0.19                                                                              | 0.19                                                                                | 0.19                                                                                | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 0.87                                                                              | 0.81                                                                              | 0.85                                                                              | 0.80                                                                              | 0.75                                                                              | 0.32                                                                              | 0.76                                                                                | 0.68                                                                                | 0.85                                                                                | 0.77                                                                                | 0.50                                                                                |
| Control Delay        | 110.1                                                                             | 60.5                                                                              | 104.1                                                                             | 65.0                                                                              | 38.2                                                                              | 72.3                                                                              | 90.9                                                                                | 48.4                                                                                | 83.0                                                                                | 83.7                                                                                | 20.8                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 110.1                                                                             | 60.5                                                                              | 104.1                                                                             | 65.0                                                                              | 38.2                                                                              | 72.3                                                                              | 90.9                                                                                | 48.4                                                                                | 83.0                                                                                | 83.7                                                                                | 20.8                                                                                |
| LOS                  | F                                                                                 | E                                                                                 | F                                                                                 | E                                                                                 | D                                                                                 | E                                                                                 | F                                                                                   | D                                                                                   | F                                                                                   | F                                                                                   | C                                                                                   |
| Approach Delay       |                                                                                   | 67.4                                                                              |                                                                                   | 65.1                                                                              |                                                                                   |                                                                                   | 64.9                                                                                |                                                                                     |                                                                                     | 70.4                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | E                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |

Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 198.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 66.9

Intersection LOS: E

Intersection Capacity Utilization 82.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 12: Highway 9 & Highway 1

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |  Ø8 |
| 30 s                                                                                   | 77 s                                                                                   | 42 s                                                                                   | 51 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |                                                                                          |
| 40 s                                                                                   | 67 s                                                                                   |                                                                                        |                                                                                          |

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

**APPENDIX F**

Existing + Project

PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                  |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 40.0                                                                              | 77.0                                                                              | 30.0                                                                              | 67.0                                                                              | 67.0                                                                              | 42.0                                                                              | 42.0                                                                               | 42.0                                                                                | 51.0                                                                                | 51.0                                                                                | 51.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 38.5%                                                                             | 15.0%                                                                             | 33.5%                                                                             | 33.5%                                                                             | 21.0%                                                                             | 21.0%                                                                              | 21.0%                                                                               | 25.5%                                                                               | 25.5%                                                                               | 25.5%                                                                               |
| Maximum Green (s)       | 36.0                                                                              | 73.0                                                                              | 26.0                                                                              | 63.0                                                                              | 63.0                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 36.0                                                                              | 73.0                                                                              | 26.0                                                                              | 63.0                                                                              | 63.0                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 36.0                                                                              | 73.0                                                                              | 26.0                                                                              | 63.0                                                                              | 63.0                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 32.5                                                                              | 73.0                                                                              | 25.8                                                                              | 66.3                                                                              | 66.3                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 28.3                                                                              | 73.0                                                                              | 23.1                                                                              | 67.8                                                                              | 67.8                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 22.6                                                                              | 73.0                                                                              | 19.4                                                                              | 69.8                                                                              | 69.8                                                                              | 38.0                                                                              | 38.0                                                                               | 38.0                                                                                | 47.0                                                                                | 47.0                                                                                | 47.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | Gap                                                                               | Hold                                                                              | Hold                                                                              | MaxR                                                                              | MaxR                                                                               | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |

**Intersection Summary**

Cycle Length: 200

Actuated Cycle Length: 198.1

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 200

70th %ile Actuated Cycle: 200

50th %ile Actuated Cycle: 199.8

30th %ile Actuated Cycle: 197.1

10th %ile Actuated Cycle: 193.4

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 1312                                                                              | 486                                                                               | 412                                                                               | 74                                                                                | 284                                                                               | 42                                                                                | 275                                                                                | 1380                                                                                |
| Future Volume (vph)  | 1312                                                                              | 486                                                                               | 412                                                                               | 74                                                                                | 284                                                                               | 42                                                                                | 275                                                                                | 1380                                                                                |
| Turn Type            | Split                                                                             | NA                                                                                | NA                                                                                | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | pm+ov                                                                               |
| Protected Phases     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 4 6                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 45.0                                                                              | 32.0                                                                              | 50.0                                                                              | 37.0                                                                               | 42.0                                                                                |
| Total Split (%)      | 28.0%                                                                             | 28.0%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 21.3%                                                                             | 33.3%                                                                             | 24.7%                                                                              | 28.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Act Effct Green (s)  | 38.8                                                                              | 38.8                                                                              | 20.0                                                                              | 10.2                                                                              | 29.3                                                                              | 8.1                                                                               | 27.5                                                                               | 70.4                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.18                                                                              | 0.09                                                                              | 0.27                                                                              | 0.07                                                                              | 0.25                                                                               | 0.64                                                                                |
| v/c Ratio            | 1.18                                                                              | 1.13dl                                                                            | 0.74                                                                              | 0.46                                                                              | 0.33                                                                              | 0.32                                                                              | 0.31                                                                               | 0.68                                                                                |
| Control Delay        | 132.4                                                                             | 81.9                                                                              | 51.4                                                                              | 59.8                                                                              | 33.5                                                                              | 58.7                                                                              | 35.4                                                                               | 6.7                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay          | 132.4                                                                             | 81.9                                                                              | 51.4                                                                              | 59.8                                                                              | 33.5                                                                              | 58.7                                                                              | 35.4                                                                               | 6.7                                                                                 |
| LOS                  | F                                                                                 | F                                                                                 | D                                                                                 | E                                                                                 | C                                                                                 | E                                                                                 | D                                                                                  | A                                                                                   |
| Approach Delay       |                                                                                   | 99.7                                                                              | 51.4                                                                              |                                                                                   | 38.6                                                                              |                                                                                   | 12.7                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   | B                                                                                  |                                                                                     |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 110  
 Natural Cycle: 100  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.18  
 Intersection Signal Delay: 55.8  
 Intersection Capacity Utilization 75.0%  
 Analysis Period (min) 15  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Intersection LOS: E  
ICU Level of Service D

Splits and Phases: 13: Chestnut Street & Mission Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø6 |  Ø4 |  Ø3 |
| 26 s                                                                                   | 42 s                                                                                   | 37 s                                                                                   | 45 s                                                                                     |
|                                                                                        |                                                                                        |  Ø7 |  Ø8 |
|                                                                                        |                                                                                        | 50 s                                                                                   | 32 s                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Existing + Project  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 45.0                                                                              | 32.0                                                                              | 50.0                                                                              | 37.0                                                                                | 42.0                                                                                |
| Total Split (%)         | 28.0%                                                                             | 28.0%                                                                             | 17.3%                                                                             | 30.0%                                                                             | 21.3%                                                                             | 33.3%                                                                             | 24.7%                                                                               | 28.0%                                                                               |
| Maximum Green (s)       | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 41.0                                                                              | 28.0                                                                              | 46.0                                                                              | 33.0                                                                                | 38.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 14.3                                                                              | 36.2                                                                              | 11.1                                                                              | 33.0                                                                                | 38.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 11.9                                                                              | 35.5                                                                              | 9.4                                                                               | 33.0                                                                                | 38.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 22.0                                                                              | 10.4                                                                              | 32.2                                                                              | 8.2                                                                               | 30.0                                                                                | 38.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 19.4                                                                              | 8.7                                                                               | 26.4                                                                              | 7.0                                                                               | 24.7                                                                                | 38.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Gap                                                                                 | Max                                                                                 |
| 10th %ile Green (s)     | 38.0                                                                              | 38.0                                                                              | 14.6                                                                              | 0.0                                                                               | 18.2                                                                              | 0.0                                                                               | 18.2                                                                                | 38.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Gap                                                                               | Skip                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                                 | Max                                                                                 |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 110  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 123.3  
 70th %ile Actuated Cycle: 120.9  
 50th %ile Actuated Cycle: 116.4  
 30th %ile Actuated Cycle: 106.8  
 10th %ile Actuated Cycle: 82.8

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Cumulative + Project PM  
PM Peak

|                      |  |  |  |  |  |  |    |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 165                                                                               | 996                                                                               | 227                                                                               | 830                                                                               | 195                                                                               | 4                                                                                 | 228                                                                                 | 254                                                                                 | 202                                                                                 | 366                                                                                 | 262                                                                                 |
| Future Volume (vph)  | 165                                                                               | 996                                                                               | 227                                                                               | 830                                                                               | 195                                                                               | 4                                                                                 | 228                                                                                 | 254                                                                                 | 202                                                                                 | 366                                                                                 | 262                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                   | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 33.0                                                                              | 17.0                                                                              | 30.0                                                                              | 30.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 10.0                                                                                | 22.0                                                                                | 22.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 41.3%                                                                             | 21.3%                                                                             | 37.5%                                                                             | 37.5%                                                                             | 10.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               | 12.5%                                                                               | 27.5%                                                                               | 27.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 16.0                                                                              | 29.4                                                                              | 12.7                                                                              | 26.0                                                                              | 26.0                                                                              | 4.0                                                                               | 14.1                                                                                | 14.1                                                                                | 6.0                                                                                 | 22.6                                                                                | 22.6                                                                                |
| Actuated g/C Ratio   | 0.20                                                                              | 0.38                                                                              | 0.16                                                                              | 0.33                                                                              | 0.33                                                                              | 0.05                                                                              | 0.18                                                                                | 0.18                                                                                | 0.08                                                                                | 0.29                                                                                | 0.29                                                                                |
| v/c Ratio            | 0.49                                                                              | 0.82                                                                              | 0.85                                                                              | 1.44                                                                              | 0.33                                                                              | 0.04                                                                              | 0.73                                                                                | 0.56                                                                                | 1.65                                                                                | 0.73                                                                                | 0.44                                                                                |
| Control Delay        | 33.5                                                                              | 29.1                                                                              | 59.3                                                                              | 232.9                                                                             | 6.9                                                                               | 37.2                                                                              | 43.7                                                                                | 10.2                                                                                | 352.4                                                                               | 35.7                                                                                | 6.6                                                                                 |
| Queue Delay          | 0.0                                                                               | 48.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 33.5                                                                              | 77.7                                                                              | 59.3                                                                              | 232.9                                                                             | 6.9                                                                               | 37.2                                                                              | 43.7                                                                                | 10.2                                                                                | 352.4                                                                               | 35.7                                                                                | 6.6                                                                                 |
| LOS                  | C                                                                                 | E                                                                                 | E                                                                                 | F                                                                                 | A                                                                                 | D                                                                                 | D                                                                                   | B                                                                                   | F                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 71.6                                                                              |                                                                                   | 166.2                                                                             |                                                                                   |                                                                                   | 26.1                                                                                |                                                                                     |                                                                                     | 103.7                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | E                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 78.2

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.65

Intersection Signal Delay: 104.3

Intersection LOS: F

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Front Street & Laurel Street

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 17 s                                                                                | 33 s                                                                                | 8 s                                                                                  | 22 s                                                                                  |
|  |  |  |  |
| 20 s                                                                                | 30 s                                                                                | 10 s                                                                                 | 20 s                                                                                  |

# APPENDIX F

## Santa Cruz DRP Study 1: Front Street & Laurel Street

Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 33.0                                                                              | 17.0                                                                              | 30.0                                                                              | 30.0                                                                              | 8.0                                                                               | 20.0                                                                               | 20.0                                                                                | 10.0                                                                                | 22.0                                                                                | 22.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 41.3%                                                                             | 21.3%                                                                             | 37.5%                                                                             | 37.5%                                                                             | 10.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               | 12.5%                                                                               | 27.5%                                                                               | 27.5%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 29.0                                                                              | 13.0                                                                              | 26.0                                                                              | 26.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 6.0                                                                                 | 18.0                                                                                | 18.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 29.0                                                                              | 13.0                                                                              | 26.0                                                                              | 26.0                                                                              | 4.0                                                                               | 16.0                                                                               | 16.0                                                                                | 6.0                                                                                 | 18.0                                                                                | 18.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 29.0                                                                              | 13.0                                                                              | 26.0                                                                              | 26.0                                                                              | 0.0                                                                               | 16.0                                                                               | 16.0                                                                                | 6.0                                                                                 | 26.0                                                                                | 26.0                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Max                                                                                | Max                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 50th %ile Green (s)     | 16.0                                                                              | 29.0                                                                              | 13.0                                                                              | 26.0                                                                              | 26.0                                                                              | 0.0                                                                               | 16.0                                                                               | 16.0                                                                                | 6.0                                                                                 | 26.0                                                                                | 26.0                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Max                                                                                | Max                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 30th %ile Green (s)     | 16.0                                                                              | 29.0                                                                              | 13.0                                                                              | 26.0                                                                              | 26.0                                                                              | 0.0                                                                               | 13.1                                                                               | 13.1                                                                                | 6.0                                                                                 | 23.1                                                                                | 23.1                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |
| 10th %ile Green (s)     | 16.0                                                                              | 30.7                                                                              | 11.3                                                                              | 26.0                                                                              | 26.0                                                                              | 0.0                                                                               | 9.8                                                                                | 9.8                                                                                 | 6.0                                                                                 | 19.8                                                                                | 19.8                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | Skip                                                                              | Gap                                                                                | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Hold                                                                                |

### Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 78.2

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 80

50th %ile Actuated Cycle: 80

30th %ile Actuated Cycle: 77.1

10th %ile Actuated Cycle: 73.8

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                      |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                | SBT                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |                                                                                    |  |
| Traffic Volume (vph) | 162                                                                               | 1075                                                                              | 64                                                                                | 982                                                                               | 59                                                                                | 96                                                                                | 97                                                                                 | 59                                                                                  |
| Future Volume (vph)  | 162                                                                               | 1075                                                                              | 64                                                                                | 982                                                                               | 59                                                                                | 96                                                                                | 97                                                                                 | 59                                                                                  |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                               | NA                                                                                  |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                    | 4                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                  |                                                                                     |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                  | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (%)      | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                              | 25.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                    | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                | Max                                                                                 |
| Act Effct Green (s)  | 12.8                                                                              | 42.5                                                                              | 8.4                                                                               | 36.1                                                                              | 16.0                                                                              | 16.0                                                                              |                                                                                    | 16.0                                                                                |
| Actuated g/C Ratio   | 0.17                                                                              | 0.55                                                                              | 0.11                                                                              | 0.47                                                                              | 0.21                                                                              | 0.21                                                                              |                                                                                    | 0.21                                                                                |
| v/c Ratio            | 0.64                                                                              | 1.16                                                                              | 0.36                                                                              | 1.32                                                                              | 0.31                                                                              | 0.39                                                                              |                                                                                    | 0.87                                                                                |
| Control Delay        | 41.3                                                                              | 105.6                                                                             | 37.1                                                                              | 176.2                                                                             | 31.6                                                                              | 25.9                                                                              |                                                                                    | 59.8                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |
| Total Delay          | 41.3                                                                              | 105.6                                                                             | 37.1                                                                              | 177.3                                                                             | 31.6                                                                              | 25.9                                                                              |                                                                                    | 59.8                                                                                |
| LOS                  | D                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                    | E                                                                                   |
| Approach Delay       |                                                                                   | 97.5                                                                              |                                                                                   | 169.4                                                                             |                                                                                   | 27.6                                                                              |                                                                                    | 59.8                                                                                |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   | F                                                                                 |                                                                                   | C                                                                                 |                                                                                    | E                                                                                   |

**Intersection Summary**

Cycle Length: 80

Actuated Cycle Length: 76.9

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 118.5

Intersection LOS: F

Intersection Capacity Utilization 99.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Pacific Avenue & Laurel Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |
|  Ø5 |  Ø6 |  Ø8 |
| 20 s                                                                                   | 40 s                                                                                   | 20 s                                                                                     |

Santa Cruz DRP Study  
2: Pacific Avenue & Laurel Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                 | SBT                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 |                                                                                     | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 4                                                                                   |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 40.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)         | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 50.0%                                                                             | 25.0%                                                                             | 25.0%                                                                             | 25.0%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 40.5                                                                              | 11.5                                                                              | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 15.9                                                                              | 42.2                                                                              | 9.7                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 13.4                                                                              | 41.1                                                                              | 8.3                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 11.1                                                                              | 40.0                                                                              | 7.1                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 8.1                                                                               | 48.1                                                                              | 0.0                                                                               | 36.0                                                                              | 16.0                                                                              | 16.0                                                                              | 16.0                                                                                | 16.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Skip                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                |

**Intersection Summary**

Cycle Length: 80

Actuated Cycle Length: 76.9

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 79.9

50th %ile Actuated Cycle: 77.4

30th %ile Actuated Cycle: 75.1

10th %ile Actuated Cycle: 72.1

Santa Cruz DRP Study  
3: Front Street & Cathcart Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

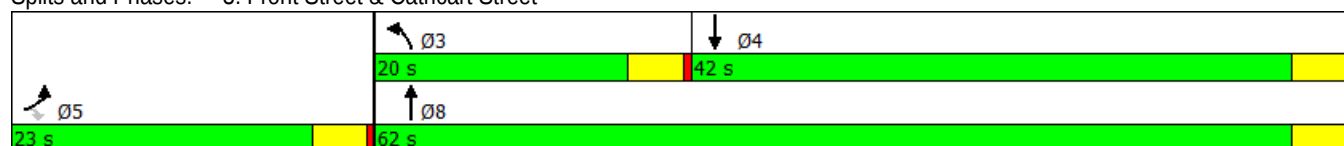
|                      |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |  |
| Traffic Volume (vph) | 193                                                                               | 111                                                                               | 116                                                                               | 569                                                                               | 805                                                                               |
| Future Volume (vph)  | 193                                                                               | 111                                                                               | 116                                                                               | 569                                                                               | 805                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 23.0                                                                              | 23.0                                                                              | 20.0                                                                              | 62.0                                                                              | 42.0                                                                              |
| Total Split (%)      | 27.1%                                                                             | 27.1%                                                                             | 23.5%                                                                             | 72.9%                                                                             | 49.4%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Act Effect Green (s) | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| Actuated g/C Ratio   | 0.22                                                                              | 0.22                                                                              | 0.19                                                                              | 0.68                                                                              | 0.45                                                                              |
| v/c Ratio            | 0.53                                                                              | 0.29                                                                              | 0.39                                                                              | 0.50                                                                              | 0.79                                                                              |
| Control Delay        | 34.6                                                                              | 11.2                                                                              | 34.4                                                                              | 8.2                                                                               | 22.9                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 0.2                                                                               |
| Total Delay          | 34.6                                                                              | 11.2                                                                              | 34.4                                                                              | 14.5                                                                              | 23.1                                                                              |
| LOS                  | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 |
| Approach Delay       | 26.1                                                                              |                                                                                   |                                                                                   | 17.9                                                                              | 23.1                                                                              |
| Approach LOS         | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |

**Intersection Summary**

Cycle Length: 85  
 Actuated Cycle Length: 85  
 Natural Cycle: 70  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 21.8  
 Intersection Capacity Utilization 59.5%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 3: Front Street & Cathcart Street



|                         |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 23.0                                                                              | 23.0                                                                              | 20.0                                                                              | 62.0                                                                              | 42.0                                                                              |
| Total Split (%)         | 27.1%                                                                             | 27.1%                                                                             | 23.5%                                                                             | 72.9%                                                                             | 49.4%                                                                             |
| Maximum Green (s)       | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| 90th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 70th %ile Green (s)     | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| 70th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 50th %ile Green (s)     | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| 50th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 30th %ile Green (s)     | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| 30th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |
| 10th %ile Green (s)     | 19.0                                                                              | 19.0                                                                              | 16.0                                                                              | 58.0                                                                              | 38.0                                                                              |
| 10th %ile Term Code     | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | MaxR                                                                              |

#### Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 85

70th %ile Actuated Cycle: 85

50th %ile Actuated Cycle: 85

30th %ile Actuated Cycle: 85

10th %ile Actuated Cycle: 85

Santa Cruz DRP Study

4: Front Street & Metro Station Access North

|                      |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Configurations  |  |  |  |  |
| Traffic Volume (vph) | 14                                                                                | 14                                                                                | 661                                                                               | 783                                                                               |
| Future Volume (vph)  | 14                                                                                | 14                                                                                | 661                                                                               | 783                                                                               |
| Turn Type            | Prot                                                                              | Perm                                                                              | NA                                                                                | NA                                                                                |
| Protected Phases     | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases     |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Detector Phase       | 5                                                                                 | 8                                                                                 | 8                                                                                 | 4                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 20.0                                                                              | 40.0                                                                              | 40.0                                                                              | 40.0                                                                              |
| Total Split (%)      | 33.3%                                                                             | 66.7%                                                                             | 66.7%                                                                             | 66.7%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effect Green (s) | 7.0                                                                               | 54.2                                                                              | 54.2                                                                              | 54.2                                                                              |
| Actuated g/C Ratio   | 0.12                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| v/c Ratio            | 0.27                                                                              | 0.05                                                                              | 0.42                                                                              | 0.52                                                                              |
| Control Delay        | 21.2                                                                              | 2.6                                                                               | 2.9                                                                               | 3.8                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               |
| Total Delay          | 21.2                                                                              | 2.6                                                                               | 2.9                                                                               | 3.9                                                                               |
| LOS                  | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |
| Approach Delay       | 21.2                                                                              |                                                                                   | 2.9                                                                               | 3.9                                                                               |
| Approach LOS         | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 3.8

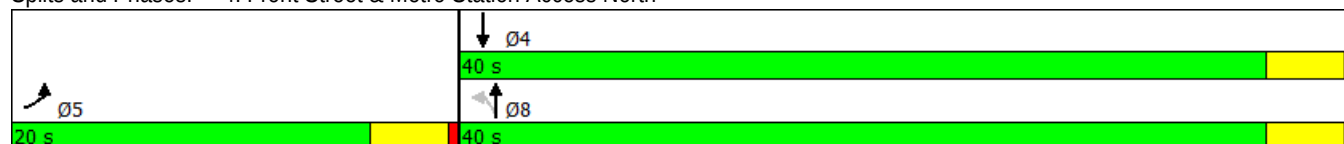
Intersection LOS: A

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Front Street & Metro Station Access North



Santa Cruz DRP Study  
4: Front Street & Metro Station Access North

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               |
| Protected Phases        | 5                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |
| Permitted Phases        |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)         | 20.0                                                                              | 40.0                                                                              | 40.0                                                                              | 40.0                                                                              |
| Total Split (%)         | 33.3%                                                                             | 66.7%                                                                             | 66.7%                                                                             | 66.7%                                                                             |
| Maximum Green (s)       | 16.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| 90th %ile Green (s)     | 10.5                                                                              | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              |
| 90th %ile Term Code     | Gap                                                                               | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 70th %ile Green (s)     | 8.0                                                                               | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              |
| 70th %ile Term Code     | Gap                                                                               | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 50th %ile Green (s)     | 0.0                                                                               | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              |
| 50th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 30th %ile Green (s)     | 0.0                                                                               | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              |
| 30th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |
| 10th %ile Green (s)     | 0.0                                                                               | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              |
| 10th %ile Term Code     | Skip                                                                              | Dwell                                                                             | Dwell                                                                             | Dwell                                                                             |

**Intersection Summary**

Cycle Length: 60  
 Actuated Cycle Length: 60.3  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 69.5  
 70th %ile Actuated Cycle: 67  
 50th %ile Actuated Cycle: 55  
 30th %ile Actuated Cycle: 55  
 10th %ile Actuated Cycle: 55

# APPENDIX F

Santa Cruz DRP Study

Cumulative + Project PM

7: Pacific Street & Front Street & Mission Street/Water Street

PM Peak

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 263                                                                               | 1133                                                                              | 165                                                                               | 166                                                                               | 893                                                                               | 371                                                                               | 221                                                                               |
| Future Volume (vph)  | 263                                                                               | 1133                                                                              | 165                                                                               | 166                                                                               | 893                                                                               | 371                                                                               | 221                                                                               |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                              |
| Protected Phases     | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              |
| Total Split (s)      | 22.0                                                                              | 42.0                                                                              | 42.0                                                                              | 16.0                                                                              | 36.0                                                                              | 32.0                                                                              | 32.0                                                                              |
| Total Split (%)      | 24.4%                                                                             | 46.7%                                                                             | 46.7%                                                                             | 17.8%                                                                             | 40.0%                                                                             | 35.6%                                                                             | 35.6%                                                                             |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                   |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               |
| Act Effct Green (s)  | 16.9                                                                              | 37.5                                                                              | 37.5                                                                              | 11.5                                                                              | 32.1                                                                              | 28.0                                                                              | 28.0                                                                              |
| Actuated g/C Ratio   | 0.19                                                                              | 0.42                                                                              | 0.42                                                                              | 0.13                                                                              | 0.36                                                                              | 0.31                                                                              | 0.31                                                                              |
| v/c Ratio            | 0.84                                                                              | 0.82                                                                              | 0.27                                                                              | 0.79                                                                              | 0.79                                                                              | 0.82                                                                              | 0.42                                                                              |
| Control Delay        | 57.9                                                                              | 28.3                                                                              | 18.2                                                                              | 62.8                                                                              | 30.9                                                                              | 42.4                                                                              | 15.5                                                                              |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay          | 57.9                                                                              | 28.3                                                                              | 18.2                                                                              | 62.8                                                                              | 30.9                                                                              | 42.4                                                                              | 15.5                                                                              |
| LOS                  | E                                                                                 | C                                                                                 | B                                                                                 | E                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 |
| Approach Delay       |                                                                                   | 32.2                                                                              |                                                                                   |                                                                                   | 35.7                                                                              | 33.4                                                                              |                                                                                   |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 | C                                                                                 |                                                                                   |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 33.6

Intersection LOS: C

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Pacific Street & Front Street & Mission Street/Water Street

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |                                                                                          |
| 16 s                                                                                   | 42 s                                                                                   |                                                                                          |
|  Ø5 |  Ø6 |  Ø8 |
| 22 s                                                                                   | 36 s                                                                                   | 32 s                                                                                     |

# APPENDIX F

Cumulative + Project PM

PM Peak

Santa Cruz DRP Study

7: Pacific Street & Front Street & Mission Street/Water Street

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | SBT                                                                               | SBR                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                    |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                  |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               |
| Total Split (s)         | 22.0                                                                              | 42.0                                                                              | 42.0                                                                              | 16.0                                                                              | 36.0                                                                              | 32.0                                                                              | 32.0                                                                               |
| Total Split (%)         | 24.4%                                                                             | 46.7%                                                                             | 46.7%                                                                             | 17.8%                                                                             | 40.0%                                                                             | 35.6%                                                                             | 35.6%                                                                              |
| Maximum Green (s)       | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 32.0                                                                              | 28.0                                                                              | 28.0                                                                               |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   |                                                                                    |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                                |
| Walk Time (s)           |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                               |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| 90th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 32.0                                                                              | 28.0                                                                              | 28.0                                                                               |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               |
| 70th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 32.0                                                                              | 28.0                                                                              | 28.0                                                                               |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               |
| 50th %ile Green (s)     | 18.0                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 32.0                                                                              | 28.0                                                                              | 28.0                                                                               |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               |
| 30th %ile Green (s)     | 17.5                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 32.5                                                                              | 28.0                                                                              | 28.0                                                                               |
| 30th %ile Term Code     | Gap                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | MaxR                                                                              | MaxR                                                                               |
| 10th %ile Green (s)     | 13.2                                                                              | 35.7                                                                              | 35.7                                                                              | 9.5                                                                               | 32.0                                                                              | 28.0                                                                              | 28.0                                                                               |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                               |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 90

70th %ile Actuated Cycle: 90

50th %ile Actuated Cycle: 90

30th %ile Actuated Cycle: 90

10th %ile Actuated Cycle: 85.2

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                      | →     | ↖     | ←     | ↗     | ↘     | ↑     | ↙     | ↓     |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group           | EBT   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
| Lane Configurations  | ↕↕    | ↖     | ↗     | ↗     |       | ↕↕    | ↖     | ↗     |
| Traffic Volume (vph) | 262   | 498   | 314   | 79    | 46    | 523   | 193   | 649   |
| Future Volume (vph)  | 262   | 498   | 314   | 79    | 46    | 523   | 193   | 649   |
| Turn Type            | NA    | Split | NA    | Perm  | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 2     | 6     | 6     |       |       | 8     |       | 4     |
| Permitted Phases     |       |       |       | 6     | 8     |       | 4     |       |
| Detector Phase       | 2     | 6     | 6     | 6     | 8     | 8     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 29.0  | 29.0  | 29.0  | 51.0  | 51.0  | 51.0  | 51.0  |
| Total Split (%)      | 20.0% | 29.0% | 29.0% | 29.0% | 51.0% | 51.0% | 51.0% | 51.0% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   |
| Lead/Lag             | Lag   | Lead  | Lead  | Lead  |       |       |       |       |
| Lead-Lag Optimize?   | Yes   | Yes   | Yes   | Yes   |       |       |       |       |
| Recall Mode          | None  | Max   | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)  | 15.0  | 25.0  | 25.0  | 25.0  |       | 47.0  | 47.0  | 47.0  |
| Actuated g/C Ratio   | 0.15  | 0.25  | 0.25  | 0.25  |       | 0.47  | 0.47  | 0.47  |
| v/c Ratio            | 0.78  | 1.00  | 1.02  | 0.19  |       | 0.81  | 1.04  | 0.92  |
| Control Delay        | 50.2  | 82.3  | 86.3  | 12.3  |       | 27.5  | 105.3 | 42.4  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 50.2  | 82.3  | 86.3  | 12.3  |       | 27.5  | 105.3 | 42.4  |
| LOS                  | D     | F     | F     | B     |       | C     | F     | D     |
| Approach Delay       | 50.2  |       | 77.9  |       |       | 27.5  |       | 55.7  |
| Approach LOS         | D     |       | E     |       |       | C     |       | E     |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 99  
 Natural Cycle: 100  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 54.0  
 Intersection Capacity Utilization 108.3%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service G

Splits and Phases: 8: Front Street & Soquel Avenue

|      |      |      |
|------|------|------|
| ↖ Ø6 | ↗ Ø2 | ↓ Ø4 |
| 29 s | 20 s | 51 s |
|      |      | ↖ Ø8 |
|      |      | 51 s |

Santa Cruz DRP Study  
8: Front Street & Soquel Avenue

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                                 | SBT                                                                                 |
| Protected Phases        | 2                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     | 4                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 | 8                                                                                 |                                                                                   | 4                                                                                   |                                                                                     |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 20.0                                                                              | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 51.0                                                                              | 51.0                                                                              | 51.0                                                                                | 51.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 29.0%                                                                             | 29.0%                                                                             | 29.0%                                                                             | 51.0%                                                                             | 51.0%                                                                             | 51.0%                                                                               | 51.0%                                                                               |
| Maximum Green (s)       | 16.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lead                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | None                                                                              | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 16.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Max                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 14.9                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| 30th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Max                                                                                 | Max                                                                                 |
| 10th %ile Green (s)     | 12.1                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 47.0                                                                              | 47.0                                                                              | 47.0                                                                                | 47.0                                                                                |
| 10th %ile Term Code     | Gap                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | Hold                                                                              | Hold                                                                              | Max                                                                                 | Max                                                                                 |

**Intersection Summary**

Cycle Length: 100  
 Actuated Cycle Length: 99  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 100  
 70th %ile Actuated Cycle: 100  
 50th %ile Actuated Cycle: 100  
 30th %ile Actuated Cycle: 98.9  
 10th %ile Actuated Cycle: 96.1

# APPENDIX F

## Santa Cruz DRP Study 11: Ocean Street & Water Street

Cumulative + Project PM  
PM Peak

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 495                                                                               | 1578                                                                              | 168                                                                               | 1008                                                                              | 339                                                                               | 203                                                                               | 1359                                                                              | 96                                                                                  | 522                                                                                 | 1448                                                                                | 399                                                                                 |
| Future Volume (vph)  | 495                                                                               | 1578                                                                              | 168                                                                               | 1008                                                                              | 339                                                                               | 203                                                                               | 1359                                                                              | 96                                                                                  | 522                                                                                 | 1448                                                                                | 399                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 16.0                                                                              | 47.0                                                                              | 12.0                                                                              | 43.0                                                                              | 43.0                                                                              | 13.0                                                                              | 36.0                                                                              | 36.0                                                                                | 25.0                                                                                | 48.0                                                                                | 48.0                                                                                |
| Total Split (%)      | 13.3%                                                                             | 39.2%                                                                             | 10.0%                                                                             | 35.8%                                                                             | 35.8%                                                                             | 10.8%                                                                             | 30.0%                                                                             | 30.0%                                                                               | 20.8%                                                                               | 40.0%                                                                               | 40.0%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode          | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Act Effct Green (s)  | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                              | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| Actuated g/C Ratio   | 0.10                                                                              | 0.36                                                                              | 0.07                                                                              | 0.32                                                                              | 0.32                                                                              | 0.08                                                                              | 0.27                                                                              | 0.27                                                                                | 0.18                                                                                | 0.37                                                                                | 0.37                                                                                |
| v/c Ratio            | 1.57                                                                              | 1.49                                                                              | 1.52                                                                              | 0.94                                                                              | 0.53                                                                              | 1.64                                                                              | 1.55                                                                              | 0.20                                                                                | 1.82                                                                                | 1.19                                                                                | 0.63                                                                                |
| Control Delay        | 305.4                                                                             | 255.2                                                                             | 311.5                                                                             | 55.8                                                                              | 12.9                                                                              | 352.6                                                                             | 284.7                                                                             | 5.6                                                                                 | 410.0                                                                               | 128.1                                                                               | 23.5                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 305.4                                                                             | 255.2                                                                             | 311.5                                                                             | 55.8                                                                              | 12.9                                                                              | 352.6                                                                             | 284.7                                                                             | 5.6                                                                                 | 410.0                                                                               | 128.1                                                                               | 23.5                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | B                                                                                 | F                                                                                 | F                                                                                 | A                                                                                   | F                                                                                   | F                                                                                   | C                                                                                   |
| Approach Delay       |                                                                                   | 266.3                                                                             |                                                                                   | 74.6                                                                              |                                                                                   |                                                                                   | 276.9                                                                             |                                                                                     |                                                                                     | 172.5                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.82

Intersection Signal Delay: 202.7

Intersection LOS: F

Intersection Capacity Utilization 137.9%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 11: Ocean Street & Water Street

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |    |
| 12 s                                                                                | 47 s                                                                                | 13 s                                                                                | 48 s                                                                                  |
|  |  |  |  |
| 16 s                                                                                | 43 s                                                                                | 25 s                                                                                | 36 s                                                                                  |

Santa Cruz DRP Study  
11: Ocean Street & Water Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                   |                                                                                     | 7                                                                                   | 4                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 8.0                                                                               | 20.0                                                                                | 20.0                                                                                | 8.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 16.0                                                                              | 47.0                                                                              | 12.0                                                                              | 43.0                                                                              | 43.0                                                                              | 13.0                                                                              | 36.0                                                                                | 36.0                                                                                | 25.0                                                                                | 48.0                                                                                | 48.0                                                                                |
| Total Split (%)         | 13.3%                                                                             | 39.2%                                                                             | 10.0%                                                                             | 35.8%                                                                             | 35.8%                                                                             | 10.8%                                                                             | 30.0%                                                                               | 30.0%                                                                               | 20.8%                                                                               | 40.0%                                                                               | 40.0%                                                                               |
| Maximum Green (s)       | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               | None                                                                              | Min                                                                               | Min                                                                               | None                                                                              | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                                | 11.0                                                                                |                                                                                     | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| 10th %ile Green (s)     | 12.0                                                                              | 43.0                                                                              | 8.0                                                                               | 39.0                                                                              | 39.0                                                                              | 9.0                                                                               | 32.0                                                                                | 32.0                                                                                | 21.0                                                                                | 44.0                                                                                | 44.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |

**Intersection Summary**

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 120  
 70th %ile Actuated Cycle: 120  
 50th %ile Actuated Cycle: 120  
 30th %ile Actuated Cycle: 120  
 10th %ile Actuated Cycle: 120

Santa Cruz DRP Study  
12: Highway 9 & Highway 1

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 490                                                                               | 2350                                                                              | 561                                                                               | 1862                                                                              | 693                                                                               | 99                                                                                | 454                                                                                 | 726                                                                                 | 1109                                                                                | 545                                                                                 | 571                                                                                 |
| Future Volume (vph)  | 490                                                                               | 2350                                                                              | 561                                                                               | 1862                                                                              | 693                                                                               | 99                                                                                | 454                                                                                 | 726                                                                                 | 1109                                                                                | 545                                                                                 | 571                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                  | Perm                                                                                | Split                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases     | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                   | 4                                                                                   | 8                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)    | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 42.0                                                                              | 77.0                                                                              | 27.0                                                                              | 62.0                                                                              | 62.0                                                                              | 43.0                                                                              | 43.0                                                                                | 43.0                                                                                | 53.0                                                                                | 53.0                                                                                | 53.0                                                                                |
| Total Split (%)      | 21.0%                                                                             | 38.5%                                                                             | 13.5%                                                                             | 31.0%                                                                             | 31.0%                                                                             | 21.5%                                                                             | 21.5%                                                                               | 21.5%                                                                               | 26.5%                                                                               | 26.5%                                                                               | 26.5%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Act Effct Green (s)  | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                                | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| Actuated g/C Ratio   | 0.19                                                                              | 0.36                                                                              | 0.12                                                                              | 0.29                                                                              | 0.29                                                                              | 0.20                                                                              | 0.20                                                                                | 0.20                                                                                | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 1.57                                                                              | 1.44                                                                              | 1.56                                                                              | 1.37                                                                              | 1.23                                                                              | 0.31                                                                              | 1.37                                                                                | 1.14                                                                                | 1.43                                                                                | 1.31                                                                                | 1.06                                                                                |
| Control Delay        | 318.0                                                                             | 246.5                                                                             | 314.4                                                                             | 221.8                                                                             | 157.3                                                                             | 71.9                                                                              | 239.3                                                                               | 131.7                                                                               | 251.0                                                                               | 209.4                                                                               | 92.3                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 318.0                                                                             | 246.5                                                                             | 314.4                                                                             | 221.8                                                                             | 157.3                                                                             | 71.9                                                                              | 239.3                                                                               | 131.7                                                                               | 251.0                                                                               | 209.4                                                                               | 92.3                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | F                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   |
| Approach Delay       |                                                                                   | 258.5                                                                             |                                                                                   | 224.1                                                                             |                                                                                   |                                                                                   | 165.2                                                                               |                                                                                     |                                                                                     | 200.1                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

**Intersection Summary**

Cycle Length: 200  
 Actuated Cycle Length: 200  
 Natural Cycle: 140  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.57  
 Intersection Signal Delay: 221.1  
 Intersection Capacity Utilization 132.2%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service H

Splits and Phases: 12: Highway 9 & Highway 1

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø4 |  Ø8 |
| 27 s                                                                                   | 77 s                                                                                   | 43 s                                                                                   | 53 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |                                                                                          |
| 42 s                                                                                   | 62 s                                                                                   |                                                                                        |                                                                                          |

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 5                                                                                 | 2                                                                                 | 1                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                 |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 8.0                                                                               | 20.0                                                                              | 8.0                                                                               | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 42.0                                                                              | 77.0                                                                              | 27.0                                                                              | 62.0                                                                              | 62.0                                                                              | 43.0                                                                              | 43.0                                                                              | 43.0                                                                                | 53.0                                                                                | 53.0                                                                                | 53.0                                                                                |
| Total Split (%)         | 21.0%                                                                             | 38.5%                                                                             | 13.5%                                                                             | 31.0%                                                                             | 31.0%                                                                             | 21.5%                                                                             | 21.5%                                                                             | 21.5%                                                                               | 26.5%                                                                               | 26.5%                                                                               | 26.5%                                                                               |
| Maximum Green (s)       | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 38.0                                                                              | 73.0                                                                              | 23.0                                                                              | 58.0                                                                              | 58.0                                                                              | 39.0                                                                              | 39.0                                                                              | 39.0                                                                                | 49.0                                                                                | 49.0                                                                                | 49.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | MaxR                                                                              | Max                                                                               | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                              | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                | MaxR                                                                                |

#### Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 200

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 200

70th %ile Actuated Cycle: 200

50th %ile Actuated Cycle: 200

30th %ile Actuated Cycle: 200

10th %ile Actuated Cycle: 200

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                      |  |  |  |  |  |  |   |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                | SBR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 2436                                                                              | 1060                                                                              | 849                                                                               | 138                                                                               | 332                                                                               | 71                                                                                | 497                                                                                | 1822                                                                                |
| Future Volume (vph)  | 2436                                                                              | 1060                                                                              | 849                                                                               | 138                                                                               | 332                                                                               | 71                                                                                | 497                                                                                | 1822                                                                                |
| Turn Type            | Split                                                                             | NA                                                                                | NA                                                                                | Prot                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | pm+ov                                                                               |
| Protected Phases     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 6                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                  | 4 6                                                                                 |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| Minimum Initial (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                               | 20.0                                                                                |
| Total Split (s)      | 53.0                                                                              | 53.0                                                                              | 26.0                                                                              | 44.0                                                                              | 32.0                                                                              | 39.0                                                                              | 27.0                                                                               | 53.0                                                                                |
| Total Split (%)      | 35.3%                                                                             | 35.3%                                                                             | 17.3%                                                                             | 29.3%                                                                             | 21.3%                                                                             | 26.0%                                                                             | 18.0%                                                                              | 35.3%                                                                               |
| Yellow Time (s)      | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)     | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                | 0.5                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Lost Time (s)  | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                               |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                |                                                                                     |
| Recall Mode          | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                |
| Act Effct Green (s)  | 49.1                                                                              | 49.1                                                                              | 22.0                                                                              | 15.8                                                                              | 28.1                                                                              | 10.7                                                                              | 23.0                                                                               | 76.1                                                                                |
| Actuated g/C Ratio   | 0.39                                                                              | 0.39                                                                              | 0.17                                                                              | 0.13                                                                              | 0.22                                                                              | 0.08                                                                              | 0.18                                                                               | 0.60                                                                                |
| v/c Ratio            | 2.09                                                                              | 2.00dl                                                                            | 1.74                                                                              | 0.67                                                                              | 0.52                                                                              | 0.50                                                                              | 0.82                                                                               | 1.04                                                                                |
| Control Delay        | 520.3                                                                             | 453.9                                                                             | 370.4                                                                             | 67.5                                                                              | 44.9                                                                              | 66.6                                                                              | 61.0                                                                               | 48.9                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay          | 520.3                                                                             | 453.9                                                                             | 370.4                                                                             | 67.5                                                                              | 44.9                                                                              | 66.6                                                                              | 61.0                                                                               | 48.9                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | D                                                                                 | E                                                                                 | E                                                                                  | D                                                                                   |
| Approach Delay       |                                                                                   | 476.8                                                                             | 370.4                                                                             |                                                                                   | 50.9                                                                              |                                                                                   | 51.9                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 | F                                                                                 |                                                                                   | D                                                                                 |                                                                                   | D                                                                                  |                                                                                     |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 125.9  
 Natural Cycle: 150  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 2.09  
 Intersection Signal Delay: 296.3  
 Intersection Capacity Utilization 129.8%  
 Analysis Period (min) 15  
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Intersection LOS: F  
ICU Level of Service H

Splits and Phases: 13: Chestnut Street & Mission Street

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø6 |  Ø4 |  Ø3 |
| 26 s                                                                                   | 53 s                                                                                   | 27 s                                                                                   | 44 s                                                                                     |
|                                                                                        |                                                                                        |  Ø7 |  Ø8 |
|                                                                                        |                                                                                        | 39 s                                                                                   | 32 s                                                                                     |

Santa Cruz DRP Study  
13: Chestnut Street & Mission Street

**APPENDIX F**  
Cumulative + Project PM  
PM Peak

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | WBT                                                                               | NBL                                                                               | NBT                                                                               | SBL                                                                               | SBT                                                                                 | SBR                                                                                 |
| Protected Phases        | 6                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 4                                                                                   |
| Minimum Initial (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 |
| Minimum Split (s)       | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)         | 53.0                                                                              | 53.0                                                                              | 26.0                                                                              | 44.0                                                                              | 32.0                                                                              | 39.0                                                                              | 27.0                                                                                | 53.0                                                                                |
| Total Split (%)         | 35.3%                                                                             | 35.3%                                                                             | 17.3%                                                                             | 29.3%                                                                             | 21.3%                                                                             | 26.0%                                                                             | 18.0%                                                                               | 35.3%                                                                               |
| Maximum Green (s)       | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 40.0                                                                              | 28.0                                                                              | 35.0                                                                              | 23.0                                                                                | 49.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                                 | 0.5                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Minimum Gap (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |
| Time Before Reduce (s)  | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Time To Reduce (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | None                                                                                |
| Walk Time (s)           | 5.0                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |
| Flash Dont Walk (s)     | 11.0                                                                              | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   | 11.0                                                                                | 11.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |
| 90th %ile Green (s)     | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 21.8                                                                              | 29.9                                                                              | 14.9                                                                              | 23.0                                                                                | 49.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 18.1                                                                              | 28.7                                                                              | 12.4                                                                              | 23.0                                                                                | 49.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 15.8                                                                              | 28.1                                                                              | 10.7                                                                              | 23.0                                                                                | 49.0                                                                                |
| 50th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 30th %ile Green (s)     | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 13.5                                                                              | 27.4                                                                              | 9.1                                                                               | 23.0                                                                                | 49.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |
| 10th %ile Green (s)     | 49.0                                                                              | 49.0                                                                              | 22.0                                                                              | 10.2                                                                              | 26.3                                                                              | 6.9                                                                               | 23.0                                                                                | 49.0                                                                                |
| 10th %ile Term Code     | Max                                                                               | Max                                                                               | Max                                                                               | Gap                                                                               | Hold                                                                              | Gap                                                                               | Max                                                                                 | Max                                                                                 |

**Intersection Summary**

Cycle Length: 150  
 Actuated Cycle Length: 125.9  
 Control Type: Actuated-Uncoordinated  
 90th %ile Actuated Cycle: 131.8  
 70th %ile Actuated Cycle: 128.1  
 50th %ile Actuated Cycle: 125.8  
 30th %ile Actuated Cycle: 123.5  
 10th %ile Actuated Cycle: 120.2