



#### 4.4 Future Year 2030 Trip Generation

The trip generation for the Future year 2030 scenario was based on the full build-out of the Project. The Technical Memorandum provided by AECOM, dated September 18, 2014, shown in Appendix E, was used to estimate the number of vehicular trips generated by the build-out of the Project for the Future Year 2030 scenario. The memorandum evaluated the current and future projected staffing level based on full-time equivalent (FTE) positions, which is a calculated unit of measurement that gauges the number of full-time and part-time employees at the Honouliuli WWTP based on collective work hours. It was estimated that the current staffing level at the Honouliuli WWTP is at 39 FTE positions, while the build-out of the Project will increase the staffing to an estimated 320 FTE positions. This results in an eight-fold increase to the number of employees at the Honouliuli WWTP. In order to determine the growth in traffic generated by this increase to 320 FTE, all existing traffic turning movements were increased linearly by a factor of 8. The Future Year 2030 Project Generated Traffic is shown below in Table 6.

**Table 6: Future Year 2030 Project Generated Traffic**

|                                                                          | FTE<br>Positions | AM Peak Hour |      |       | PM Peak Hour |      |       |
|--------------------------------------------------------------------------|------------------|--------------|------|-------|--------------|------|-------|
|                                                                          |                  | Enter        | Exit | Total | Enter        | Exit | Total |
| Estimate Trips Accessing the WWTP in 2014                                |                  |              |      |       |              |      |       |
| Existing 2014<br>Traffic¹                                                | 39 FTE           | 20           | 28   | 48    | 33           | 43   | 76    |
| New Proposed Trips Accessing the WWTP in 2030<br>Multiplier: 820 percent |                  |              |      |       |              |      |       |
| Future Year<br>2030 Traffic                                              | 320 FTE          | 164          | 230  | 394   | 271          | 353  | 624   |
| Existing 2014<br>Traffic                                                 |                  | (20)         | (28) | (48)  | (33)         | (43) | (76)  |
| TOTAL NEW TRIPS²                                                         |                  | 144          | 202  | 346   | 238          | 310  | 548   |

Notes:

1. Existing 2014 Traffic shows all entering/exiting traffic accessing the existing Honouliuli driveways determined by the traffic counts conducted for this TIAR.
2. Since the eight-fold multiplier includes existing 2014 traffic, the existing traffic was removed to determine the Total New Trips for Future Year 2030 scenario.

#### 4.5 Trip Distribution/Assignment

Trip distribution is based on existing traffic flow patterns throughout the study area. Future Year 2030 Project trips were assigned to all existing driveways in addition to three (3) new accesses described in Section 4.3.

## 4.6 Future Year 2030 Analysis

Based on a LOS comparison between Future Year 2030 and Base Year 2030/Future Year 2021, the majority of individual movements projected to operate at LOS E/F for Base Year 2030/Future Year 2021 conditions will continue operating at similar levels of service for Future Year 2030 conditions during the AM and PM peak hours of traffic except for the following:

### Geiger Road/Honouliuli Driveway 1

This intersection is forecast to operate similar to Base Year 2030 conditions with the exception of the southbound shared left/through/right movement which is projected to operate at LOS E during the PM peak hours of traffic. The southbound left-turn movement currently operates with only 10 vehicles and queues were not observed to extend beyond one vehicle long. An additional 35 left-turn vehicles generated by the Project should have minimal impacts to the queues along the southbound approach.

### Geiger Road/Honouliuli Driveway 2

The southbound shared left/through/right movement is projected to operate at LOS E(F) during the AM(PM) peak hours of traffic, respectively. The southbound approach will continue to operate at a low 20 vehicle right-turn movement and 70 vehicle left-turn movement during the more critical PM peak hour. With an average of only 1 southbound left-turn vehicle arriving every minute, the increase in southbound traffic should have minimal impacts on southbound queues.

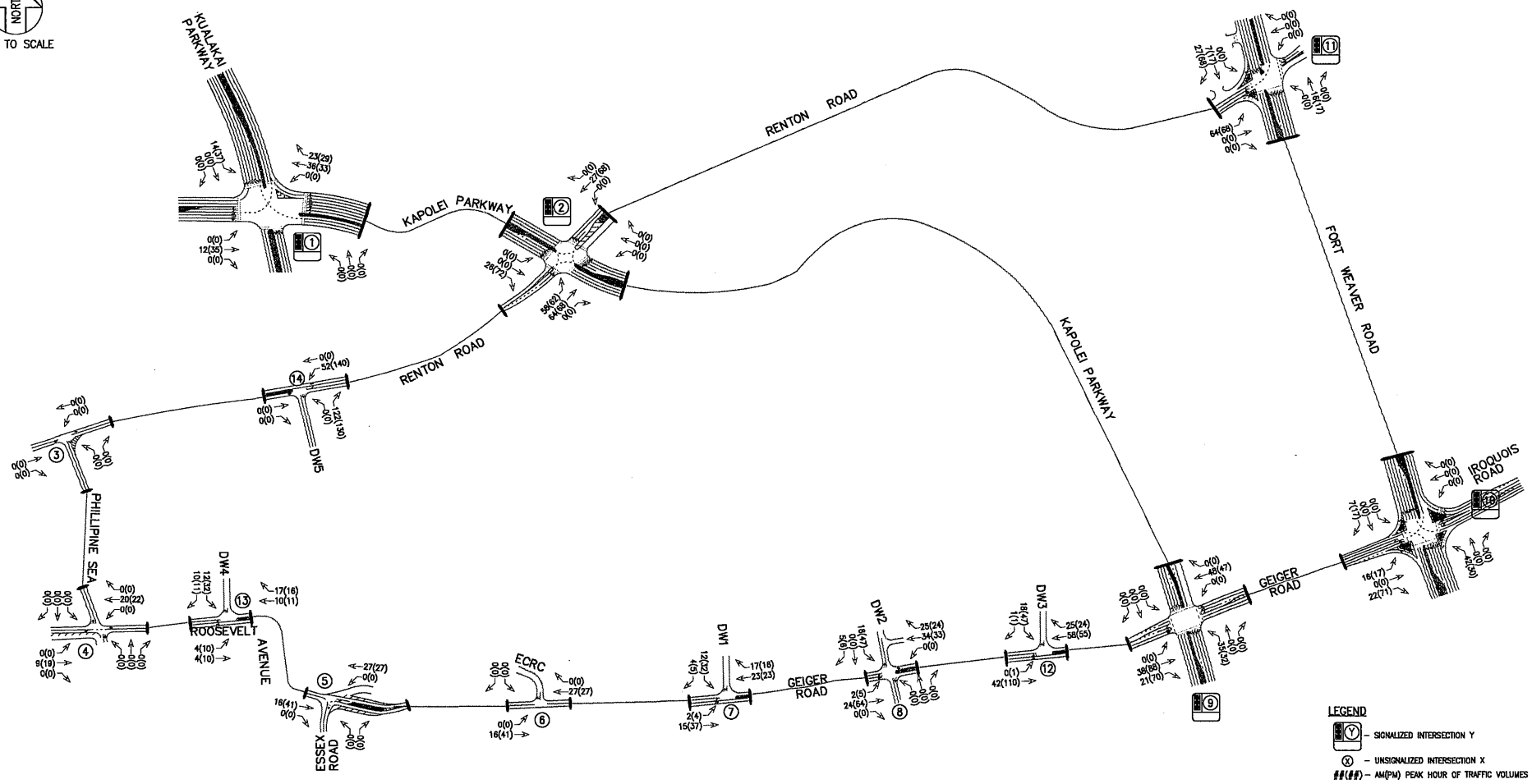
### Geiger Road/Honouliuli Driveway 3

This new proposed access is forecast to operate at LOS D or better during the AM and PM peak hours of traffic with the exception of the southbound shared left/right-turn movement which is projected to operate at LOS F during the PM peak hour of traffic. The southbound left-turn movement will operate at a low 50 vehicles during the PM peak hour. With an average of less than 1 southbound left-turn vehicle arriving every minute, the movement should not experience heavy southbound queues.

### Fort Weaver Road/Geiger Road/Iroquois Road & Fort Weaver Road/Renton Road

As discussed in Section 4.3, intersections along Fort Weaver Road through the Ewa region will continue to experience LOS F and over-capacity conditions at some movements. However, this is generally ascribed to requisite long traffic signal cycle lengths, split phase operation and generally long crosswalk lengths across Fort Weaver Road. Further widening of Fort Weaver Road is not prescribed by the ORTP 2035, and is generally considered infeasible due to insufficient ROW.

Figure 8 illustrates the Project Generated Traffic volumes for Year 2030. Figure 9 illustrates the forecast traffic volumes, lane configuration, and LOS for Future Year 2030 conditions. Table 7 summarizes the delay, v/c, and LOS at the study intersections for Base Year 2030 and Future Year 2030 conditions. The full LOS summary table is provided in Appendix C.



**LEGEND**

① - SIGNALIZED INTERSECTION Y

② - UNSIGNALIZED INTERSECTION X

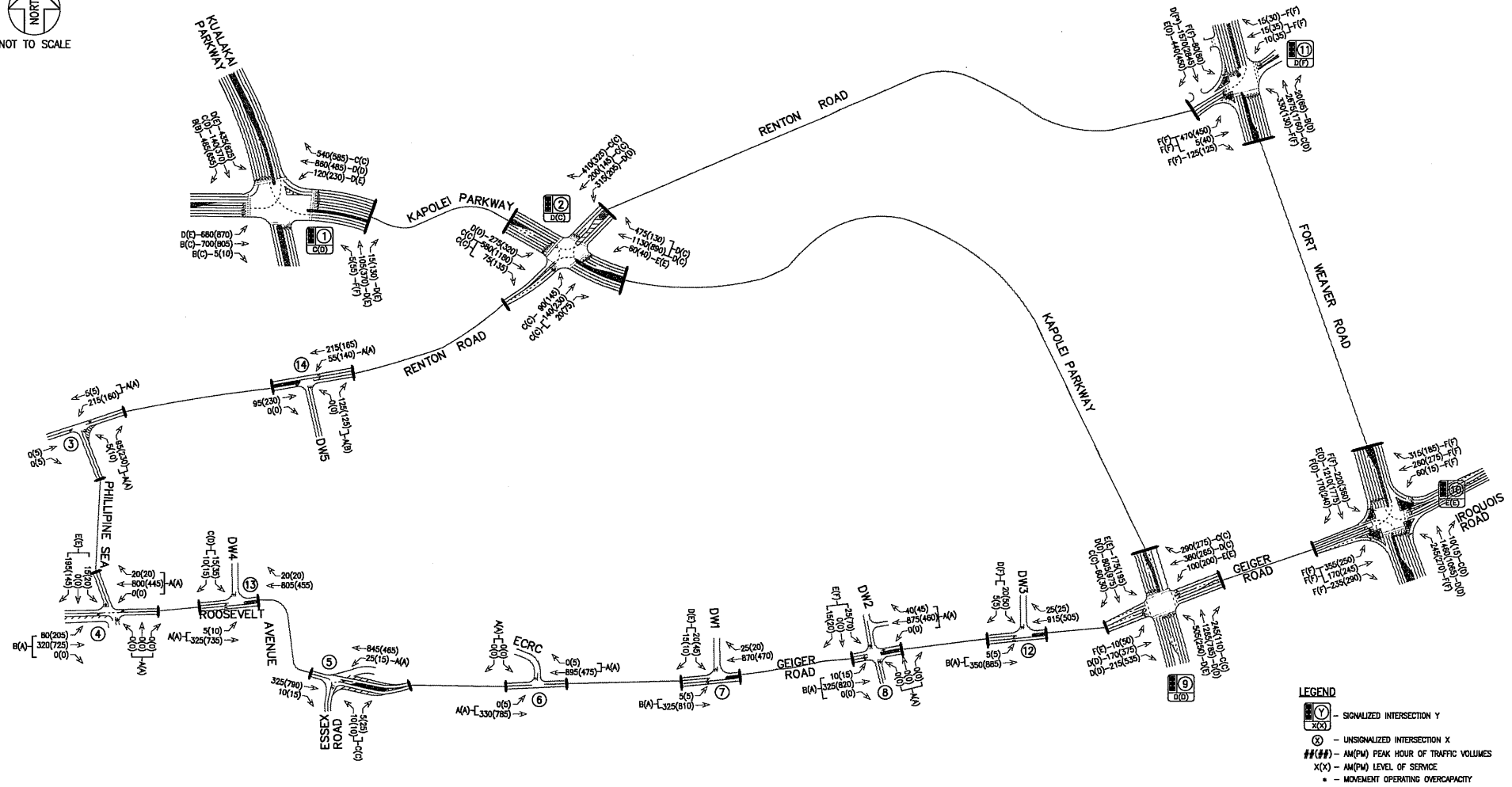
##(##) - AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

HONOLULU WASTEWATER  
TREATMENT PLAN TIAR

**AUSTIN, TSUTSUMI & ASSOCIATES, INC.**  
ENGINEERS, SURVEYORS  
HONOLULU, HAWAII

**YEAR 2030 PROJECT ONLY VOLUMES**

**FIGURE**  
**8**



HONOLULU WASTEWATER  
TREATMENT PLAN TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU, HAWAII

FUTURE YEAR 2030 LANE CONFIGURATION, VOLUME, AND LOS

FIGURE

9

Table 7: Base Year 2030 (no mit), Base Year 2030 (with mit) and Future Year 2030 (no mit) Intersection Level of Service Summary

| Intersection                                            | BY 2030 (No Mit) |           |     |           |           |     | BY 2030 WITH MITIGATION |           |     |           |           |     | FY 2030 (No Mit) |           |     |           |           |     |
|---------------------------------------------------------|------------------|-----------|-----|-----------|-----------|-----|-------------------------|-----------|-----|-----------|-----------|-----|------------------|-----------|-----|-----------|-----------|-----|
|                                                         | AM               |           |     | PM        |           |     | AM                      |           |     | PM        |           |     | AM               |           |     | PM        |           |     |
|                                                         | HCM Delay        | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS | HCM Delay               | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS | HCM Delay        | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS |
| <b>1: Kapolei Pkwy &amp; Kualakai Pkwy</b>              |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                                   | 41.3             | 0.86      | D   | 59.7      | 0.92      | E   |                         |           |     |           |           |     | 42.6             | 0.86      | D   | 72.6      | 0.96      | E   |
| EB TH                                                   | 18.1             | 0.32      | B   | 31.5      | 0.40      | C   |                         |           |     |           |           |     | 18.4             | 0.32      | B   | 33.5      | 0.43      | C   |
| EB RT                                                   | 18.2             | 0.32      | B   | 31.6      | 0.40      | C   |                         |           |     |           |           |     | 18.5             | 0.32      | B   | 33.7      | 0.43      | C   |
| WB LT                                                   | 50.5             | 0.63      | D   | 70.7      | 0.80      | E   |                         |           |     |           |           |     | 51.7             | 0.63      | D   | 72.7      | 0.81      | E   |
| WB TH                                                   | 34.6             | 0.67      | C   | 53.4      | 0.49      | D   |                         |           |     |           |           |     | 35.4             | 0.69      | D   | 54.6      | 0.52      | D   |
| WB RT                                                   | 22.0             | 0.48      | C   | 34.1      | 0.50      | C   |                         |           |     |           |           |     | 22.1             | 0.49      | C   | 33.7      | 0.51      | C   |
| NB LT                                                   | 93.3             | 0.54      | F   | 84.9      | 0.77      | F   |                         |           |     |           |           |     | 94.7             | 0.55      | F   | 86.7      | 0.77      | F   |
| NB TH                                                   | 44.8             | 0.33      | D   | 65.3      | 0.77      | E   |                         |           |     |           |           |     | 45.9             | 0.34      | D   | 65.7      | 0.74      | E   |
| NB TH/RT                                                | 44.7             | 0.34      | D   | 65.3      | 0.78      | E   |                         |           |     |           |           |     | 45.9             | 0.34      | D   | 65.5      | 0.74      | E   |
| SB LT                                                   | 48.9             | 0.84      | D   | 76.1      | 0.93      | E   |                         |           |     |           |           |     | 50.8             | 0.85      | D   | 78.0      | 0.94      | E   |
| SB TH                                                   | 30.6             | 0.17      | C   | 40.6      | 0.37      | D   |                         |           |     |           |           |     | 31.0             | 0.17      | C   | 40.1      | 0.36      | D   |
| SB RT                                                   | 14.8             | 0.23      | B   | 13.8      | 0.26      | B   |                         |           |     |           |           |     | 15.0             | 0.23      | B   | 14.1      | 0.25      | B   |
| Overall                                                 | 31.8             | -         | C   | 49.4      | -         | D   |                         |           |     |           |           |     | 32.6             | -         | C   | 52.7      | -         | D   |
| <b>2: Kapolei Pkwy &amp; Renton Rd</b>                  |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                                   | 37.1             | 0.11      | D   | 31.5      | 0.23      | C   | 31.3                    | 0.10      | C   | 24.4      | 0.20      | C   | 34.1             | 0.28      | C   | 27.9      | 0.36      | C   |
| EB TH/RT                                                | 30.7             | 0.17      | C   | 31.0      | 0.45      | C   | 26.0                    | 0.16      | C   | 24.0      | 0.40      | C   | 26.4             | 0.26      | C   | 24.5      | 0.46      | C   |
| WB LT                                                   | 53.9             | 0.81      | D   | 56.0      | 0.77      | E   | 42.8                    | 0.77      | D   | 36.1      | 0.64      | D   | 51.5             | 0.81      | D   | 40.1      | 0.66      | D   |
| WB TH                                                   | 32.5             | 0.31      | C   | 27.6      | 0.15      | C   | 27.5                    | 0.30      | C   | 21.4      | 0.13      | C   | 27.1             | 0.32      | C   | 21.7      | 0.22      | C   |
| WB RT                                                   | 33.1             | 0.35      | C   | 27.7      | 0.16      | C   | 26.9                    | 0.24      | C   | 21.6      | 0.16      | C   | 26.2             | 0.24      | C   | 21.3      | 0.17      | C   |
| NB LT                                                   | 73.5             | 0.77      | E   | 73.9      | 0.78      | E   | 65.3                    | 0.77      | E   | 67.0      | 0.78      | E   | 68.9             | 0.77      | E   | 71.4      | 0.78      | E   |
| NB TH                                                   | 59.5             | 0.97      | E   | 34.3      | 0.67      | C   | 36.3                    | 0.86      | D   | 28.6      | 0.64      | C   | 44.1             | 0.90      | D   | 33.9      | 0.68      | C   |
| NB TH/RT                                                | 71.3             | 0.97      | E   | 35.7      | 0.68      | C   | 42.0                    | 0.86      | D   | 29.8      | 0.65      | C   | 52.3             | 0.91      | D   | 35.7      | 0.69      | C   |
| SB LT                                                   | 65.0             | 0.90      | E   | 66.4      | 0.92      | E   | 50.8                    | 0.78      | D   | 43.1      | 0.77      | D   | 54.4             | 0.79      | D   | 48.0      | 0.79      | D   |
| SB TH                                                   | 19.2             | 0.27      | B   | 19.1      | 0.52      | B   | 18.7                    | 0.28      | B   | 21.4      | 0.60      | C   | 21.7             | 0.31      | C   | 26.5      | 0.67      | C   |
| SB TH/RT                                                | 19.3             | 0.27      | B   | 19.3      | 0.52      | B   | 18.8                    | 0.29      | B   | 21.7      | 0.60      | C   | 21.9             | 0.31      | C   | 27.2      | 0.67      | C   |
| Overall                                                 | 50.1             | -         | D   | 33.1      | -         | C   | 35.1                    | -         | D   | 27.6      | -         | C   | 40.3             | -         | D   | 31.6      | -         | C   |
| <b>3: Phillipine Sea &amp; Renton Rd</b>                |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB TH/RT                                                | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| WB LT/TH                                                | 7.6              | 0.15      | A   | 7.5       | 0.11      | A   |                         |           |     |           |           |     | -                | -         | -   | 7.5       | 0.11      | A   |
| NB LT/RT                                                | 9.0              | 0.11      | A   | 9.6       | 0.25      | A   |                         |           |     |           |           |     | -                | -         | -   | 9.6       | 0.25      | A   |
| <b>4: Phillipine Sea &amp; Roosevelt Ave</b>            |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT/TH/RT                                             | 10.2             | 0.11      | B   | 9.2       | 0.21      | A   |                         |           |     |           |           |     | 10.3             | 0.11      | B   | 9.3       | 0.21      | A   |
| WB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| NB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| SB LT/TH/RT                                             | 43.8             | 0.74      | E   | 41.9      | 0.67      | E   |                         |           |     |           |           |     | 48.1             | 0.77      | E   | 49.0      | 0.72      | E   |
| <b>5: Essex Rd &amp; Roosevelt Ave/Geiger Rd</b>        |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB TH/RT                                                | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| WB LT                                                   | 8.0              | 0.02      | A   | 9.6       | 0.02      | A   |                         |           |     |           |           |     | 8.1              | 0.02      | A   | 9.8       | 0.02      | A   |
| WB TH                                                   | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| NB LT/RT                                                | 21.2             | 0.07      | C   | 20.1      | 0.14      | C   |                         |           |     |           |           |     | 22.5             | 0.07      | C   | 21.6      | 0.15      | C   |
| <b>6: Geiger Rd &amp; Ewa Refuse Convenience Center</b> |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT/TH/RT                                             | 0.0              | -         | A   | 8.4       | 0.01      | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 8.5       | 0.01      | A   |
| WB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| NB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| SB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| <b>7: Geiger Rd &amp; Honouliuli Drwy 1</b>             |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                                   | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | 10.1             | 0.01      | B   | 8.5       | 0.01      | A   |
| EB LT/TH                                                | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| WB TH/RT                                                | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| SB LT/RT                                                | 21.7             | 0.09      | C   | 22.4      | 0.07      | C   |                         |           |     |           |           |     | 25.7             | 0.18      | D   | 36.1      | 0.34      | E   |
| <b>8: Geiger Rd &amp; Honouliuli Drwy 2</b>             |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                                   | -                | -         | -   | -         | -         | -   |                         |           |     |           |           |     | 10.3             | 0.02      | B   | 8.6       | 0.02      | A   |
| EB LT/TH/RT                                             | 9.9              | 0.01      | A   | 8.4       | 0.01      | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| WB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| NB LT/TH/RT                                             | 0.0              | -         | A   | 0.0       | -         | A   |                         |           |     |           |           |     | 0.0              | -         | A   | 0.0       | -         | A   |
| SB LT/TH/RT                                             | 21.6             | 0.07      | C   | 27.3      | 0.19      | D   |                         |           |     |           |           |     | 35.2             | 0.27      | E   | 85.8      | 0.74      | F   |
| <b>9: Kapolei Pkwy &amp; Geiger Rd</b>                  |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                                   | 99.4             | 0.62      | F   | 77.6      | 0.77      | E   | 83.7                    | 0.60      | F   | 74.6      | 0.77      | E   | 86.5             | 0.60      | F   | 78.4      | 0.77      | E   |
| EB TH                                                   | 52.5             | 0.28      | D   | 52.4      | 0.81      | D   | 44.1                    | 0.46      | D   | 53.2      | 0.82      | D   | 44.5             | 0.53      | D   | 52.3      | 0.85      | D   |
| EB TH/RT                                                | 52.5             | 0.29      | D   | 54.2      | 0.83      | D   | -                       | -         | -   | -         | -         | -   | -                | -         | -   | -         | -         | -   |
| EB RT                                                   | -                | -         | -   | -         | -         | -   | 40.5                    | 0.09      | D   | 48.3      | 0.70      | D   | 39.9             | 0.10      | D   | 54.6      | 0.86      | D   |
| WB LT                                                   | 86.9             | 0.83      | F   | 87.3      | 0.90      | F   | 67.9                    | 0.81      | E   | 67.9      | 0.88      | E   | 72.0             | 0.81      | E   | 77.9      | 0.89      | E   |
| WB TH                                                   | 68.2             | 0.89      | E   | 35.4      | 0.41      | D   | 50.0                    | 0.85      | D   | 34.7      | 0.42      | C   | 54.1             | 0.87      | D   | 32.7      | 0.43      | C   |
| WB RT                                                   | 44.9             | 0.23      | D   | 32.2      | 0.15      | C   | 35.2                    | 0.16      | D   | 31.5      | 0.16      | C   | 34.9             | 0.20      | C   | 29.1      | 0.17      | C   |
| NB LT                                                   | 97.9             | 1.03      | F   | 73.4      | 0.89      | E   | 53.2                    | 0.86      | D   | 59.4      | 0.77      | E   | 49.7             | 0.85      | D   | 66.2      | 0.82      | E   |
| NB TH                                                   | 34.4             | 0.81      | C   | 41.7      | 0.74      | D   | 39.2                    | 0.91      | D   | 40.0      | 0.75      | D   | 46.4             | 0.95      | D   | 50.7      | 0.84      | D   |
| NB RT                                                   | 21.6             | 0.23      | C   | 30.2      | 0.06      | C   | 21.1                    | 0.24      | C   | 28.9      | 0.05      | C   | 23.1             | 0.24      | C   | 34.1      | 0.05      | C   |
| SB LT                                                   | 86.3             | 0.89      | F   | 70.9      | 0.88      | E   | 70.5                    | 0.87      | E   | 61.4      | 0.87      | E   | 74.8             | 0.87      | E   | 73.9      | 0.88      | E   |
| SB TH                                                   | 46.2             | 0.78      | D   | 61.6      | 0.96      | E   | 30.5                    | 0.66      | C   | 37.9      | 0.80      | D   | 35.7             | 0.72      | D   | 54.4      | 0.92      | D   |
| SB RT                                                   | 32.8             | 0.03      | C   | 30.9      | 0.02      | C   | 22.4                    | 0.03      | C   | 24.5      | 0.02      | C   | 25.7             | 0.03      | C   | 30.2      | 0.02      | C   |
| Overall                                                 | 53.3             | -         | D   | 55.9      | -         | E   | 41.9                    | -         | D   | 45.2      | -         | D   | 46.1             | -         | D   | 54.5      | -         | D   |

Note:

\* = over-capacity, v/c &gt; 1

Table 7: Base Year 2030 (no mit), Base Year 2030 (with mit) and Future Year 2030 (no mit) Intersection Level of Service Summary (continued)

| Intersection                                        | BY 2030 (No Mit) |           |     |           |           |     | BY 2030 WITH MITIGATION |           |     |           |           |     | FY 2030 (No Mit) |           |     |           |           |     |
|-----------------------------------------------------|------------------|-----------|-----|-----------|-----------|-----|-------------------------|-----------|-----|-----------|-----------|-----|------------------|-----------|-----|-----------|-----------|-----|
|                                                     | AM               |           |     | PM        |           |     | AM                      |           |     | PM        |           |     | AM               |           |     | PM        |           |     |
|                                                     | HCM Delay        | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS | HCM Delay               | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS | HCM Delay        | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS |
| <b>10: Ft Weaver Rd &amp; Geiger Rd/Iroquois Rd</b> |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                               | 108.7            | 0.73      | F   | 103.8     | 0.67      | F   |                         |           |     |           |           |     | 110.7            | 0.76      | F   | 97.0      | 0.61      | F   |
| EB LT/TH                                            | 101.9            | 0.71      | F   | 99.8      | 0.67      | F   |                         |           |     |           |           |     | 101.9            | 0.72      | F   | 94.3      | 0.62      | F   |
| EB RT                                               | 106.8            | 0.70      | F   | 107.7     | 0.72      | F   |                         |           |     |           |           |     | 112.5            | 0.77      | F   | 122.9     | 0.88      | F   |
| WB LT                                               | 84.0             | 0.20      | F   | 81.4      | 0.05      | F   |                         |           |     |           |           |     | 84.3             | 0.20      | F   | 85.3      | 0.06      | F   |
| WB TH                                               | 112.4            | 0.83      | F   | 121.1     | 0.89      | F   |                         |           |     |           |           |     | 113.7            | 0.84      | F   | 150.4     | 0.99      | F   |
| WB RT                                               | 85.1             | 0.28      | F   | 83.7      | 0.19      | F   |                         |           |     |           |           |     | 85.4             | 0.28      | F   | 87.7      | 0.20      | F   |
| NB LT                                               | 110.8            | 0.68      | F   | 110.4     | 0.72      | F   |                         |           |     |           |           |     | 112.3            | 0.74      | F   | 111.2     | 0.75      | F   |
| NB TH                                               | 44.8             | 0.62      | D   | 46.8      | 0.50      | D   |                         |           |     |           |           |     | 45.1             | 0.63      | D   | 46.8      | 0.50      | D   |
| NB RT                                               | 31.1             | 0.01      | C   | 36.8      | 0.01      | D   |                         |           |     |           |           |     | 31.3             | 0.01      | C   | 36.8      | 0.01      | D   |
| SB LT                                               | 97.7             | 0.73      | F   | 125.8     | 0.81      | F   |                         |           |     |           |           |     | 98.0             | 0.73      | F   | 125.1     | 0.81      | F   |
| SB TH                                               | 63.7             | 0.52      | E   | 47.4      | 0.78      | D   |                         |           |     |           |           |     | 65.2             | 0.53      | E   | 50.0      | 0.79      | D   |
| SB RT                                               | 130.3            | 0.13      | F   | 38.8      | 0.22      | D   |                         |           |     |           |           |     | 133.7            | 0.14      | F   | 41.2      | 0.25      | D   |
| Overall                                             | 74.6             | 0.69      | E   | 69.5      | 0.80      | E   |                         |           |     |           |           |     | 76.4             | 0.71      | E   | 73.4      | 0.85      | E   |
| <b>11: Ft Weaver Rd &amp; Renton Rd</b>             |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                               | 113.1            | 0.81      | F   | 113.6     | 0.81      | F   |                         |           |     |           |           |     | 107.9            | 0.81      | F   | 113.6     | 0.85      | F   |
| EB LT/TH                                            | 111.5            | 0.79      | F   | 113.3     | 0.81      | F   |                         |           |     |           |           |     | 110.0            | 0.82      | F   | 114.3     | 0.85      | F   |
| EB RT                                               | 87.5             | 0.22      | F   | 87.2      | 0.22      | F   |                         |           |     |           |           |     | 82.7             | 0.20      | F   | 83.2      | 0.21      | F   |
| WB LT/TH                                            | 119.6            | 0.46      | F   | 122.3     | 0.66      | F   |                         |           |     |           |           |     | 119.6            | 0.46      | F   | 122.3     | 0.66      | F   |
| WB RT                                               | 110.5            | 0.01      | F   | 103.5     | 0.02      | F   |                         |           |     |           |           |     | 110.5            | 0.01      | F   | 103.5     | 0.02      | F   |
| NB LT                                               | 126.8            | 0.90      | F   | 98.8      | 0.75      | F   |                         |           |     |           |           |     | 139.8            | 0.95      | F   | 99.4      | 0.75      | F   |
| NB TH                                               | 23.0             | 0.88      | C   | 34.6      | 0.61      | C   |                         |           |     |           |           |     | 27.0             | 0.91      | C   | 37.7      | 0.64      | D   |
| NB RT                                               | 15.5             | 0.02      | B   | 40.8      | 0.06      | D   |                         |           |     |           |           |     | 17.3             | 0.02      | B   | 44.1      | 0.06      | D   |
| SB LT                                               | 127.5            | 0.68      | F   | 115.2     | 0.64      | F   |                         |           |     |           |           |     | 131.7            | 0.71      | F   | 115.1     | 0.64      | F   |
| SB TH                                               | 48.5             | 0.69      | D   | 86.0      | 1.06      | F*  |                         |           |     |           |           |     | 51.1             | 0.71      | D   | 105.5     | 1.10      | F*  |
| SB RT                                               | 63.5             | 0.29      | E   | 38.6      | 0.27      | D   |                         |           |     |           |           |     | 68.7             | 0.31      | E   | 44.0      | 0.32      | D   |
| Overall                                             | 49.1             | 0.87      | D   | 70.4      | 0.95      | E   |                         |           |     |           |           |     | 53.3             | 0.90      | D   | 80.9      | 0.98      | F   |
| <b>12: Geiger Rd &amp; Honouliuli Drwy 3</b>        |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                               |                  |           |     |           |           |     |                         |           |     |           |           |     | 10.3             | 0.01      | B   | 8.6       | 0.01      | A   |
| WB TH/RT                                            |                  |           |     |           |           |     |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| SB LT/RT                                            |                  |           |     |           |           |     |                         |           |     |           |           |     | 30.2             | 0.16      | D   | 50.8      | 0.44      | F   |
| <b>13: Roosevelt Ave &amp; Honouliuli Drwy 4</b>    |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                               |                  |           |     |           |           |     |                         |           |     |           |           |     | 9.8              | 0.01      | A   | 8.5       | 0.01      | A   |
| WB TH/RT                                            |                  |           |     |           |           |     |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| SB LT/RT                                            |                  |           |     |           |           |     |                         |           |     |           |           |     | 22.7             | 0.12      | C   | 27.3      | 0.25      | D   |
| <b>14: Honouliuli Drwy 5 &amp; Renton Rd</b>        |                  |           |     |           |           |     |                         |           |     |           |           |     |                  |           |     |           |           |     |
| EB LT                                               |                  |           |     |           |           |     |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| WB LT                                               |                  |           |     |           |           |     |                         |           |     |           |           |     | 7.5              | 0.04      | A   | 8.1       | 0.12      | A   |
| WB TH                                               |                  |           |     |           |           |     |                         |           |     |           |           |     | -                | -         | -   | -         | -         | -   |
| NB LT/RT                                            |                  |           |     |           |           |     |                         |           |     |           |           |     | 9.4              | 0.14      | A   | 10.6      | 0.19      | B   |

Note:  
\* = over-capacity, v/c > 1



## 5. CONCLUSION

The Honouliuli Wastewater Treatment Plant proposes to upgrade and expand the facility, which will include the potential relocation of non-process facilities currently located at the Sand Island Wastewater Treatment Plant to the Project site. This TIAR analyzed two benchmark years; Year 2021, which corresponds to the peak year of construction for the Project and Year 2030, which corresponds to the build-out of the Project.

### 5.1 Existing Conditions

All study intersections operate at LOS D or better with adequate capacity except along Kapolei Parkway and Fort Weaver Road at its intersections with Renton Road and Geiger Road/Iroquois Road. Although some movements operated at LOS E conditions along Kapolei Parkway, no heavy queues were observed at its intersections with Kualakai Parkway, Renton Road and Geiger Road, with most vehicles typically clearing the intersection within one signal cycle.

Along Fort Weaver Road, the majority of movements at these intersections currently operate at LOS E/F conditions during the AM and PM peak hours of traffic mainly due to long delays as a result of requisite long cycle lengths (approximately 4 minutes long). These two intersections also provide split-phase signal operation on the side streets and long pedestrian crossing times across Fort Weaver Road, which contribute to the long delays. During the AM peak hour, the northbound traffic is generally heavier, while during the PM peak hour, traffic is heavier in the southbound direction. Further widening of Fort Weaver Road is not prescribed by the ORTP 2035, and is generally considered infeasible due to insufficient ROW. Therefore, no mitigation was recommended for any Base Year or Future Year scenarios.

### 5.2 Base Year WITHOUT Project Scenario

The year 2021 was selected as the base year to reflect the anticipated peak year of construction activity, which was assumed to occur during Phase 1 construction of the Honouliuli WWTP. The year 2030 was selected as the base year to reflect the anticipated build-out of the Honouliuli WWTP.

The Oahu Regional Transportation Plan 2035 (ORTP) model, which was prepared in 2011, serves as the basis for future traffic projections of future conditions throughout this TIAR. Calculated defacto growth rates ranging from 0.5-3.5 percent were used to generate Base Year 2021 and 2030 traffic projections. In addition to the defacto growth, the following developments were supplemented for additional traffic growth along the roadway network: University of Hawaii at West Oahu (UHWO), Ka Makana Alii Shopping Center, Ho'opili and East Kapolei developments. Upon build-out of the Ka Makana Alii Shopping Center, one of the proposed accesses is anticipated to be provided as a new south leg extension from the existing Kapolei Parkway/Kualakai Parkway intersection, ultimately providing a 4-legged intersection, described in further detail in Section 3.3. This improvement was assumed to be completed by Year 2021.

#### 5.2.1 Base Year 2021 Analysis

Based on a LOS comparison between Base Year 2021 and existing conditions, the majority of individual movements that are projected to operate at LOS E/F for existing conditions will continue operating at similar levels of service for Base Year 2021 conditions during the AM and PM peak hours of traffic.



### **5.2.2 Base Year 2030 Analysis**

Due to increased regional growth along the major thoroughfares, the Roosevelt Avenue/Phillipine Sea unsignalized intersection will operate at LOS E conditions along its southbound approach but should not experience heavy queuing due to its low volume.

Based on a LOS comparison between Base Year 2021 and Base Year 2030 conditions, the majority of individual movements that are projected to operate at LOS E/F for Base Year 2021 will continue operating at similar levels of service for Base Year 2030 conditions during the AM and PM peak hours of traffic except at the Kapolei Parkway/Geiger Road intersection and Kapolei Parkway/Renton Road intersection.

The Kapolei Parkway/Geiger Road intersection is anticipated to operate overall at LOS E during the PM peak hour. In addition, all turning movements are forecast to operate at LOS E/F conditions during the AM and PM peak hours of traffic, while the shared eastbound through/right-turn lane is anticipated to operate at LOS D during the PM peak hour due to a relatively high 190(465) vehicle right-turn movement. In order to improve the eastbound approach it is recommended that the shared through/right lane be restriped to an exclusive right-turn lane, while the northbound approach is recommended to be widened to provide two left-turn lanes.

The Kapolei Parkway/Renton Road intersection is forecast to operate with increased delays compared to Base Year 2021 as a result of growth from surrounding development and ambient growth. In order to mitigate the deficiencies of the intersection, dual southbound left-turn lanes were recommended to accommodate the relatively high 275(320) southbound left-turn vehicles during the AM(PM) peak hours. With the dual southbound left-turn lanes, all movements at the intersection are forecast to operate similar to Base Year 2021 conditions.

## **5.3 Future Year WITH Project Scenario**

### **5.3.1 Future Year Trip Generation and Distribution**

A Technical Memorandum provided by AECOM, dated September 18, 2014, shown in Appendix E, was used to estimate the number of vehicular trips generated by construction activity for the Future Year 2021 scenarios. Future year 2021 trip generation is the anticipated peak year of construction activity, and estimated to generate 185 construction workers arriving to the site during the AM peak hour and 185 construction workers exiting the site during the PM peak in addition to 8 total trips (4 entering and 4 exiting) generated by cement trucks during each of the AM and PM peak hours of traffic. The memorandum also estimated the number of vehicular trips generated by the build-out of the Project for the Future Year 2030 scenario and was based on a comparison of existing vs. projected 2030 Full-Time Equivalent (FTE) positions. Based on this comparison, it was estimated that existing traffic accessing the current site will increase eight-fold.

Trip distribution was generally based on existing traffic flow patterns throughout the study area. Future Year Project trips were assigned to all existing driveways in addition to three (3) new accesses described in Section 4.3.



### **5.3.2 Future Year 2021 Analysis**

Based on a LOS comparison between Future Year 2021 and Base Year 2021, the majority of individual movements that are projected to operate at LOS E/F for Base Year 2021 conditions will continue operating at similar levels of service for Future Year 2021 conditions during the AM and PM peak hours of traffic.

Due to increased regional growth along the major thoroughfares and slight increase in exiting Project traffic, the Geiger Road/Honouliuli Driveway 2 intersection will operate at LOS E conditions along its southbound approach but should not experience heavy queuing due to its low volume. Although entering traffic volumes at the Project driveways are anticipated to operate with adequate LOS, based on guidance from the AASHTO Green Book, eastbound left-turn lanes are recommended along Geiger Road and Roosevelt Avenue at its intersection with Honouliuli Driveway 1, 2, 3 and 4 and a westbound left-turn lane is recommended at the Renton Road/Driveway 5 intersection.

### **5.3.3 Future Year 2030 Analysis**

Due to increased regional growth along the major thoroughfares and slight increase in exiting Project traffic, various unsignalized intersection will operate at LOS E/F conditions along its exiting approach but should not experience heavy queuing due to its low volume.

Based on a LOS comparison between Future Year 2030 and Base Year 2030/Future Year 2021, the majority of individual movements projected to operate at LOS E/F for Base Year 2030/Future Year 2021 conditions will continue operating at similar levels of service for Future Year 2030 conditions during the AM and PM peak hours of traffic.



## 6. RECOMMENDATIONS

The following mitigation at the Kapolei Parkway/Kualakai Parkway intersection was triggered by the Ka Makana Alii Shopping Center and was assumed to be completed by the developer prior to the Base Year 2021 conditions. Ka Makana Alii has already broken ground on the shopping center and portions of the improvement are currently listed on the Statewide Transportation Improvement Program (STIP):

### Kapolei Parkway/Kualakai Parkway

1. Northbound Approach
  - a. Provide a new approach that includes one left-turn lane, one through lane and one shared through/right-turn lane.
2. Southbound Approach
  - a. Provide two through lanes.
3. Eastbound Approach
  - a. Convert three through lanes to two through lanes and one shared through/right-turn lane.
4. Westbound Approach
  - a. Provide two new left-turn lanes.

The following roadway improvements are recommended for the Base Year 2030 and Future Year 2021 scenarios.

### 6.1 Base Year 2030 WITHOUT Project

#### Kapolei Parkway/Geiger Road Intersection

1. Eastbound Approach
  - a. Restripe and convert the shared through/right lane to an exclusive right-turn lane.
2. Northbound Approach
  - a. Widen to provide two left-turn lanes.

#### Kapolei Parkway/Renton Road Intersection

1. Southbound Approach
  - a. Widen to provide two left-turn lanes.

### 6.2 Future Year 2021 WITH Project

#### Geiger Road at its intersection with Honouliuli Driveway 1, 2 and 3

1. Eastbound Approach
  - a. Widen to provide a left-turn storage lane.
  - b. Provide for a minimum storage of at least 50 feet.



Roosevelt Avenue/Honouliuli Driveway 4 Intersection

1. Eastbound Approach
  - a. Widen to provide a left-turn storage lane.
  - b. Provide for a minimum storage of at least 50 feet.

Renton Road/Honouliuli Driveway 5 Intersection

1. Westbound Approach
  - a. Widen to provide a left-turn storage lane.
  - b. Provide for a minimum storage of at least 125 feet.



## REFERENCES

1. Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.
2. Julian Ng, Traffic Impact Analysis Report for East Kapolei II, November 2007.
3. Transportation Research Board, Highway Capacity Manual, 2010.
4. Parsons Brinckerhoff Quade & Douglas Inc., Traffic Study for University of Hawaii – West Oahu, October 2006.
5. PB Americas Inc., Traffic Evaluation for Ka Makana Alii, June 2011.

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# APPENDICES

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# APPENDIX A

## Traffic Count Data

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# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM\_Essex Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | From North |      |      |       | GEIGER RD<br>From East |      |      |       | ESSEX RD<br>From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|------------|------|------|-------|------------------------|------|------|-------|------------------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 06:00 AM    | 0          | 0    | 0    | 0     | 0                      | 67   | 1    | 0     | 0                      | 0    | 0    | 0     | 1                      | 37   | 0    | 0     | 106        |
| 06:15 AM    | 0          | 0    | 0    | 0     | 0                      | 97   | 3    | 0     | 0                      | 0    | 0    | 0     | 4                      | 48   | 0    | 0     | 152        |
| 06:30 AM    | 0          | 0    | 0    | 0     | 0                      | 120  | 5    | 0     | 2                      | 0    | 0    | 0     | 6                      | 62   | 0    | 0     | 195        |
| 06:45 AM    | 0          | 0    | 0    | 0     | 0                      | 112  | 7    | 0     | 3                      | 0    | 0    | 0     | 2                      | 68   | 0    | 0     | 192        |
| Total       | 0          | 0    | 0    | 0     | 0                      | 396  | 16   | 0     | 5                      | 0    | 0    | 0     | 13                     | 215  | 0    | 0     | 645        |
| 07:00 AM    | 0          | 0    | 0    | 0     | 0                      | 112  | 5    | 0     | 0                      | 0    | 2    | 0     | 0                      | 57   | 0    | 0     | 176        |
| 07:15 AM    | 0          | 0    | 0    | 0     | 0                      | 155  | 6    | 0     | 2                      | 0    | 1    | 0     | 2                      | 74   | 0    | 0     | 240        |
| 07:30 AM    | 0          | 0    | 0    | 0     | 0                      | 153  | 5    | 0     | 2                      | 0    | 2    | 0     | 1                      | 71   | 0    | 0     | 234        |
| 07:45 AM    | 0          | 0    | 0    | 0     | 0                      | 136  | 7    | 0     | 0                      | 0    | 0    | 0     | 2                      | 63   | 0    | 0     | 208        |
| Total       | 0          | 0    | 0    | 0     | 0                      | 556  | 23   | 0     | 4                      | 0    | 5    | 0     | 5                      | 265  | 0    | 0     | 858        |
| Grand Total | 0          | 0    | 0    | 0     | 0                      | 952  | 39   | 0     | 9                      | 0    | 5    | 0     | 18                     | 480  | 0    | 0     | 1503       |
| Apprch %    | 0          | 0    | 0    | 0     | 0                      | 96.1 | 3.9  | 0     | 64.3                   | 0    | 35.7 | 0     | 3.6                    | 96.4 | 0    | 0     |            |
| Total %     | 0          | 0    | 0    | 0     | 0                      | 63.3 | 2.6  | 0     | 0.6                    | 0    | 0.3  | 0     | 1.2                    | 31.9 | 0    | 0     |            |

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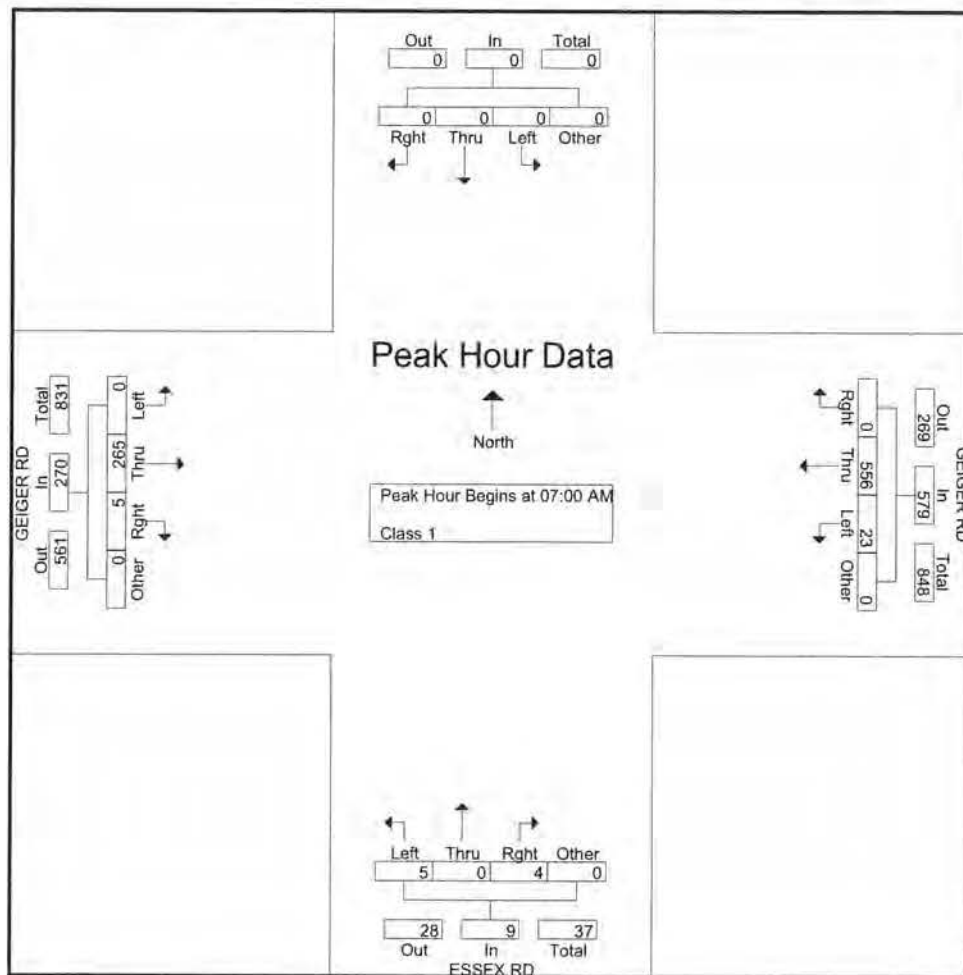
File Name : AM\_Essex Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | ESSEX RD<br>From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |            |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |            |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |            |
| 07:00 AM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 112  | 5    | 0     | 117        | 0                      | 0    | 2    | 0     | 2          | 0                      | 57   | 0    | 0     | 57         | 176        |
| 07:15 AM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 155  | 6    | 0     | 161        | 2                      | 0    | 1    | 0     | 3          | 2                      | 74   | 0    | 0     | 76         | 240        |
| 07:30 AM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 153  | 5    | 0     | 158        | 2                      | 0    | 2    | 0     | 4          | 1                      | 71   | 0    | 0     | 72         | 234        |
| 07:45 AM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 136  | 7    | 0     | 143        | 0                      | 0    | 0    | 0     | 0          | 2                      | 63   | 0    | 0     | 65         | 208        |
| Total Volume                                               | 0          | 0    | 0    | 0     | 0          | 0                      | 556  | 23   | 0     | 579        | 4                      | 0    | 5    | 0     | 9          | 5                      | 265  | 0    | 0     | 270        | 858        |
| % App. Total                                               | 0          | 0    | 0    | 0     | 0          | 0                      | 96   | 4    | 0     |            | 44.4                   | 0    | 55.6 | 0     |            | 1.9                    | 98.1 | 0    | 0     |            |            |
| PHF                                                        | .000       | .000 | .000 | .000  | .000       | .000                   | .897 | .821 | .000  | .899       | .500                   | .000 | .625 | .000  | .563       | .625                   | .895 | .000 | .000  | .888       | .894       |



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Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | FT WEAVER RD<br>From North |      |      |         |      | GEIGER RD<br>From East |      |      |      | FT WEAVER RD<br>From South |      |      |         |      | GEIGER RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|---------|------|------------------------|------|------|------|----------------------------|------|------|---------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds |            |
| 06:00 AM    | 28                         | 97   | 31   | 0       | 0    | 63                     | 43   | 2    | 1    | 1                          | 364  | 11   | 2       | 5    | 11                     | 12   | 62   | 2    | 735        |
| 06:15 AM    | 28                         | 153  | 51   | 0       | 0    | 77                     | 31   | 3    | 0    | 3                          | 275  | 25   | 2       | 4    | 12                     | 16   | 49   | 2    | 731        |
| 06:30 AM    | 38                         | 196  | 39   | 0       | 0    | 65                     | 36   | 5    | 1    | 0                          | 343  | 9    | 0       | 9    | 13                     | 29   | 58   | 3    | 844        |
| 06:45 AM    | 29                         | 217  | 36   | 0       | 0    | 87                     | 37   | 5    | 3    | 1                          | 356  | 20   | 0       | 8    | 30                     | 17   | 56   | 2    | 904        |
| Total       | 123                        | 663  | 157  | 0       | 0    | 292                    | 147  | 15   | 5    | 5                          | 1338 | 65   | 4       | 26   | 66                     | 74   | 225  | 9    | 3214       |
| 07:00 AM    | 27                         | 223  | 55   | 0       | 0    | 64                     | 46   | 13   | 2    | 1                          | 336  | 24   | 1       | 8    | 41                     | 24   | 69   | 8    | 942        |
| 07:15 AM    | 26                         | 219  | 43   | 1       | 0    | 74                     | 68   | 22   | 1    | 3                          | 276  | 30   | 1       | 18   | 49                     | 42   | 59   | 7    | 939        |
| 07:30 AM    | 38                         | 250  | 27   | 0       | 0    | 57                     | 55   | 10   | 2    | 0                          | 348  | 32   | 0       | 9    | 48                     | 39   | 76   | 7    | 998        |
| 07:45 AM    | 29                         | 183  | 35   | 1       | 0    | 71                     | 53   | 5    | 4    | 0                          | 388  | 60   | 1       | 6    | 18                     | 24   | 55   | 5    | 938        |
| Total       | 120                        | 875  | 160  | 2       | 0    | 266                    | 222  | 50   | 9    | 4                          | 1348 | 146  | 3       | 41   | 156                    | 129  | 259  | 27   | 3817       |
| Grand Total | 243                        | 1538 | 317  | 2       | 0    | 558                    | 369  | 65   | 14   | 9                          | 2686 | 211  | 7       | 67   | 222                    | 203  | 484  | 36   | 7031       |
| Appreh %    | 11.6                       | 73.2 | 15.1 | 0.1     | 0    | 55.5                   | 36.7 | 6.5  | 1.4  | 0.3                        | 90.1 | 7.1  | 0.2     | 2.2  | 23.5                   | 21.5 | 51.2 | 3.8  |            |
| Total %     | 3.5                        | 21.9 | 4.5  | 0       | 0    | 7.9                    | 5.2  | 0.9  | 0.2  | 0.1                        | 38.2 | 3    | 0.1     | 1    | 3.2                    | 2.9  | 6.9  | 0.5  |            |

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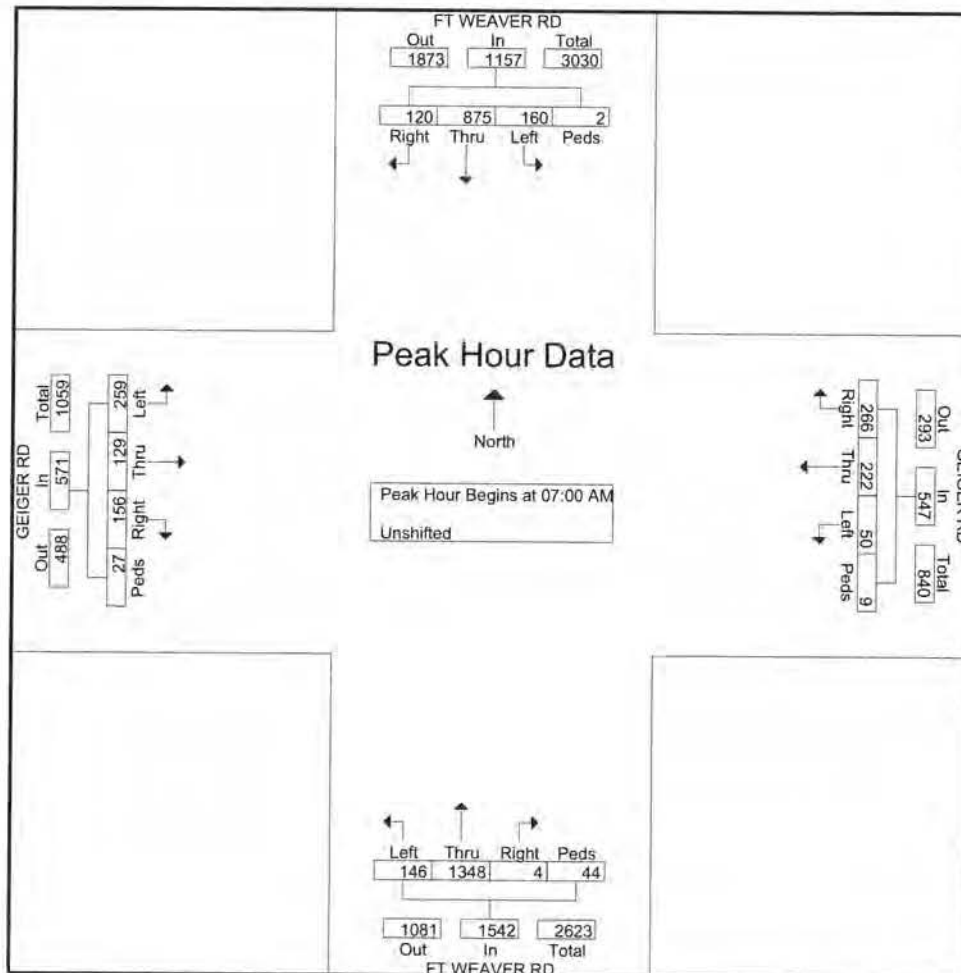
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Start Date : 9/3/2014

Page No : 2

|                                                            | FT WEAVER RD<br>From North |      |      |        |      |            | GEIGER RD<br>From East |      |      |      |            | FT WEAVER RD<br>From South |      |      |        |      |            | GEIGER RD<br>From West |      |      |      |            |            |  |
|------------------------------------------------------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|------------|--|
| Start Time                                                 | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |  |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |  |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |  |
| 07:00 AM                                                   | 27                         | 223  | 55   | 0      | 0    | 305        | 64                     | 46   | 13   | 2    | 125        | 1                          | 336  | 24   | 1      | 8    | 370        | 41                     | 24   | 69   | 8    | 142        | 942        |  |
| 07:15 AM                                                   | 26                         | 219  | 43   | 1      | 0    | 289        | 74                     | 68   | 22   | 1    | 165        | 3                          | 276  | 30   | 1      | 18   | 328        | 49                     | 42   | 59   | 7    | 157        | 939        |  |
| 07:30 AM                                                   | 38                         | 250  | 27   | 0      | 0    | 315        | 57                     | 55   | 10   | 2    | 124        | 0                          | 348  | 32   | 0      | 9    | 389        | 48                     | 39   | 76   | 7    | 170        | 998        |  |
| 07:45 AM                                                   | 29                         | 183  | 35   | 1      | 0    | 248        | 71                     | 53   | 5    | 4    | 133        | 0                          | 388  | 60   | 1      | 6    | 455        | 18                     | 24   | 55   | 5    | 102        | 938        |  |
| Total Volume                                               | 120                        | 875  | 160  | 2      | 0    | 1157       | 266                    | 222  | 50   | 9    | 547        | 4                          | 1348 | 146  | 3      | 41   | 1542       | 156                    | 129  | 259  | 27   | 571        | 3817       |  |
| % App. Total                                               | 10.4                       | 75.6 | 13.8 | 0.2    | 0    |            | 48.6                   | 40.6 | 9.1  | 1.6  |            | 0.3                        | 87.4 | 9.5  | 0.2    | 2.7  |            | 27.3                   | 22.6 | 45.4 | 4.7  |            |            |  |
| PHF                                                        | .789                       | .875 | .727 | .500   | .000 | .918       | .899                   | .816 | .568 | .563 | .829       | .333                       | .869 | .608 | .750   | .569 | .847       | .796                   | .768 | .852 | .844 | .840       | .956       |  |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM\_Ft Weaver Rd - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | FT WEAVER RD<br>From North |      |      |         |      | RENTON RD<br>From East |      |      |      | FT WEAVER RD<br>From South |      |      |         |      | RENTON RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|---------|------|------------------------|------|------|------|----------------------------|------|------|---------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds |            |
| 06:00 AM    | 24                         | 154  | 1    | 17      | 0    | 3                      | 11   | 7    | 4    | 11                         | 493  | 8    | 0       | 0    | 11                     | 4    | 85   | 0    | 833        |
| 06:15 AM    | 46                         | 271  | 0    | 14      | 0    | 4                      | 4    | 6    | 19   | 3                          | 820  | 12   | 0       | 1    | 7                      | 1    | 94   | 0    | 1302       |
| 06:30 AM    | 53                         | 313  | 0    | 18      | 0    | 2                      | 1    | 0    | 7    | 4                          | 795  | 21   | 0       | 0    | 8                      | 4    | 105  | 0    | 1331       |
| 06:45 AM    | 65                         | 293  | 2    | 16      | 0    | 0                      | 1    | 4    | 10   | 5                          | 758  | 27   | 0       | 0    | 14                     | 2    | 107  | 0    | 1304       |
| Total       | 188                        | 1031 | 3    | 65      | 0    | 9                      | 17   | 17   | 40   | 23                         | 2866 | 68   | 0       | 1    | 40                     | 11   | 391  | 0    | 4770       |
| 07:00 AM    | 68                         | 280  | 0    | 12      | 0    | 2                      | 3    | 2    | 8    | 5                          | 713  | 45   | 0       | 0    | 18                     | 1    | 106  | 0    | 1263       |
| 07:15 AM    | 71                         | 394  | 0    | 15      | 0    | 1                      | 4    | 0    | 12   | 5                          | 699  | 40   | 0       | 0    | 18                     | 0    | 84   | 0    | 1343       |
| 07:30 AM    | 49                         | 239  | 3    | 16      | 0    | 3                      | 3    | 2    | 11   | 3                          | 563  | 54   | 0       | 0    | 37                     | 3    | 105  | 0    | 1091       |
| 07:45 AM    | 47                         | 263  | 2    | 19      | 0    | 4                      | 2    | 0    | 9    | 2                          | 675  | 58   | 1       | 0    | 37                     | 1    | 96   | 0    | 1216       |
| Total       | 235                        | 1176 | 5    | 62      | 0    | 10                     | 12   | 4    | 40   | 15                         | 2650 | 197  | 1       | 0    | 110                    | 5    | 391  | 0    | 4913       |
| Grand Total | 423                        | 2207 | 8    | 127     | 0    | 19                     | 29   | 21   | 80   | 38                         | 5516 | 265  | 1       | 1    | 150                    | 16   | 782  | 0    | 9683       |
| Apprch %    | 15.3                       | 79.8 | 0.3  | 4.6     | 0    | 12.8                   | 19.5 | 14.1 | 53.7 | 0.7                        | 94.8 | 4.6  | 0       | 0    | 15.8                   | 1.7  | 82.5 | 0    |            |
| Total %     | 4.4                        | 22.8 | 0.1  | 1.3     | 0    | 0.2                    | 0.3  | 0.2  | 0.8  | 0.4                        | 57   | 2.7  | 0       | 0    | 1.5                    | 0.2  | 8.1  | 0    |            |

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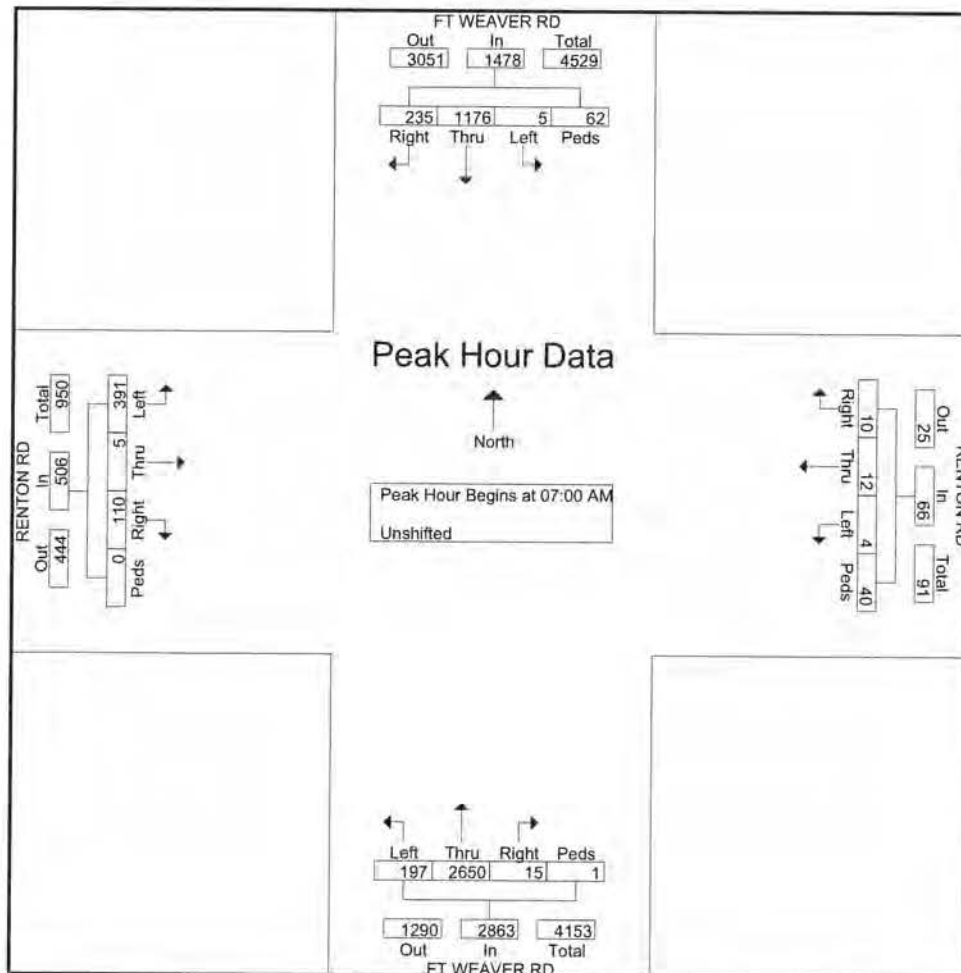
File Name : AM\_Ft Weaver Rd - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

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|                                                            | FT WEAVER RD<br>From North |      |      |        |      |            | RENTON RD<br>From East |      |      |      |            | FT WEAVER RD<br>From South |      |      |        |      |            | RENTON RD<br>From West |      |      |      |            |            |
|------------------------------------------------------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|------------|
| Start Time                                                 | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |
| 07:00 AM                                                   | 68                         | 280  | 0    | 12     | 0    | 360        | 2                      | 3    | 2    | 8    | 15         | 5                          | 713  | 45   | 0      | 0    | 763        | 18                     | 1    | 106  | 0    | 125        | 1263       |
| 07:15 AM                                                   | 71                         | 394  | 0    | 15     | 0    | 480        | 1                      | 4    | 0    | 12   | 17         | 5                          | 699  | 40   | 0      | 0    | 744        | 18                     | 0    | 84   | 0    | 102        | 1343       |
| 07:30 AM                                                   | 49                         | 239  | 3    | 16     | 0    | 307        | 3                      | 3    | 2    | 11   | 19         | 3                          | 563  | 54   | 0      | 0    | 620        | 37                     | 3    | 105  | 0    | 145        | 1091       |
| 07:45 AM                                                   | 47                         | 263  | 2    | 19     | 0    | 331        | 4                      | 2    | 0    | 9    | 15         | 2                          | 675  | 58   | 1      | 0    | 736        | 37                     | 1    | 96   | 0    | 134        | 1216       |
| Total Volume                                               | 235                        | 1176 | 5    | 62     | 0    | 1478       | 10                     | 12   | 4    | 40   | 66         | 15                         | 2650 | 197  | 1      | 0    | 2863       | 110                    | 5    | 391  | 0    | 506        | 4913       |
| % App. Total                                               | 15.9                       | 79.6 | 0.3  | 4.2    | 0    |            | 15.2                   | 18.2 | 6.1  | 60.6 |            | 0.5                        | 92.6 | 6.9  | 0      | 0    |            | 21.7                   | 1    | 77.3 | 0    |            |            |
| PHF                                                        | .827                       | .746 | .417 | .816   | .000 | .770       | .625                   | .750 | .500 | .833 | .868       | .750                       | .929 | .849 | .250   | .000 | .938       | .743                   | .417 | .922 | .000 | .872       | .915       |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521

Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM\_Kapolei Pkwy - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | KAPOLEI PKWY<br>From North |      |      |      | GEIGER RD<br>From East |      |      |      | KAPOLEI PKWY<br>From South |      |      |      | GEIGER RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|------|------------------------|------|------|------|----------------------------|------|------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | Peds | Right                  | Thru | Left | Peds |            |
| 06:00 AM    | 5                          | 29   | 14   | 0    | 21                     | 47   | 9    | 1    | 18                         | 101  | 54   | 1    | 17                     | 19   | 1    | 0    | 337        |
| 06:15 AM    | 8                          | 62   | 17   | 0    | 32                     | 41   | 12   | 8    | 14                         | 98   | 63   | 0    | 30                     | 13   | 4    | 1    | 403        |
| 06:30 AM    | 7                          | 58   | 28   | 2    | 27                     | 61   | 11   | 3    | 16                         | 97   | 78   | 0    | 40                     | 19   | 3    | 0    | 450        |
| 06:45 AM    | 9                          | 83   | 25   | 6    | 28                     | 55   | 9    | 3    | 24                         | 126  | 79   | 0    | 55                     | 30   | 3    | 2    | 537        |
| Total       | 29                         | 232  | 84   | 8    | 108                    | 204  | 41   | 15   | 72                         | 422  | 274  | 1    | 142                    | 81   | 11   | 3    | 1727       |
| 07:00 AM    | 10                         | 119  | 29   | 1    | 38                     | 46   | 20   | 13   | 20                         | 130  | 70   | 0    | 46                     | 22   | 3    | 4    | 571        |
| 07:15 AM    | 10                         | 146  | 44   | 3    | 44                     | 55   | 23   | 22   | 31                         | 184  | 94   | 0    | 44                     | 34   | 2    | 9    | 745        |
| 07:30 AM    | 4                          | 138  | 36   | 2    | 53                     | 61   | 28   | 8    | 47                         | 230  | 90   | 0    | 46                     | 33   | 3    | 0    | 779        |
| 07:45 AM    | 18                         | 98   | 37   | 0    | 60                     | 48   | 17   | 5    | 41                         | 173  | 82   | 3    | 31                     | 21   | 0    | 2    | 636        |
| Total       | 42                         | 501  | 146  | 6    | 195                    | 210  | 88   | 48   | 139                        | 717  | 336  | 3    | 167                    | 110  | 8    | 15   | 2731       |
| Grand Total | 71                         | 733  | 230  | 14   | 303                    | 414  | 129  | 63   | 211                        | 1139 | 610  | 4    | 309                    | 191  | 19   | 18   | 4458       |
| Apprch %    | 6.8                        | 69.9 | 21.9 | 1.3  | 33.3                   | 45.5 | 14.2 | 6.9  | 10.7                       | 58   | 31.1 | 0.2  | 57.5                   | 35.6 | 3.5  | 3.4  |            |
| Total %     | 1.6                        | 16.4 | 5.2  | 0.3  | 6.8                    | 9.3  | 2.9  | 1.4  | 4.7                        | 25.5 | 13.7 | 0.1  | 6.9                    | 4.3  | 0.4  | 0.4  |            |

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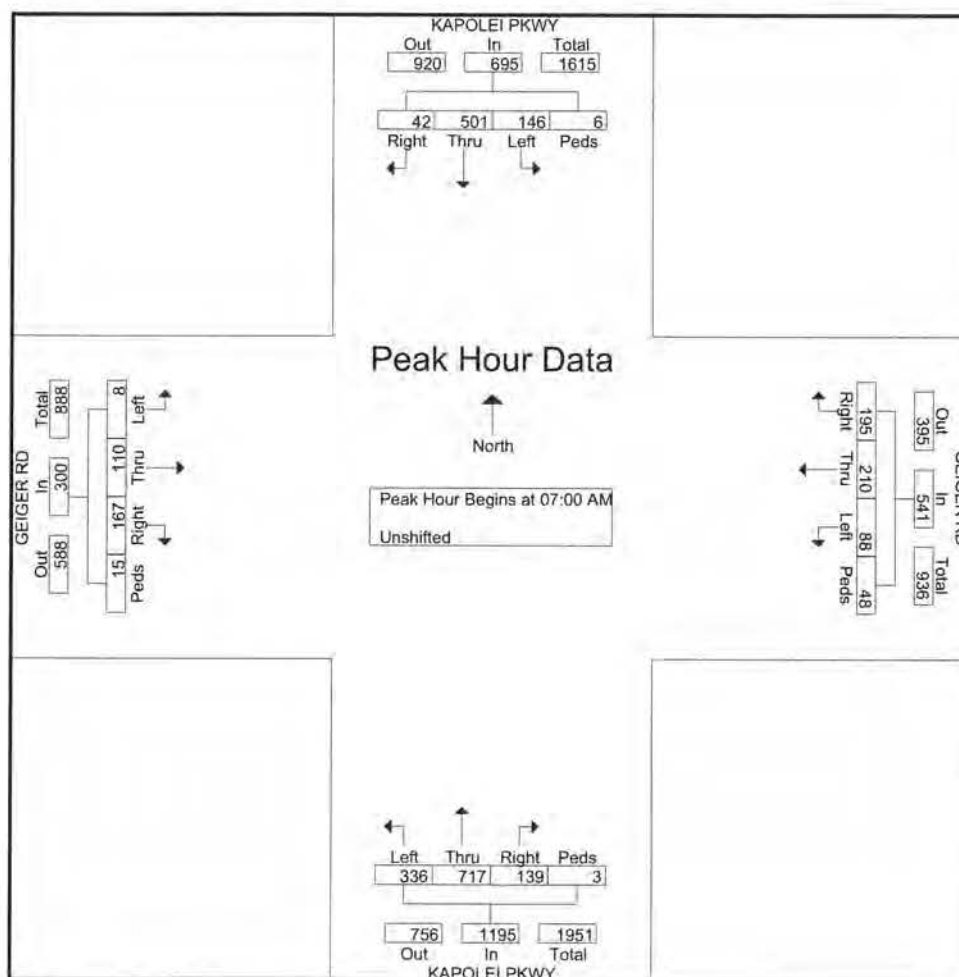
File Name : AM\_Kapolei Pkwy - Geiger Rd

Site Code : 00000000

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|                                                            | KAPOLEI PKWY<br>From North |      |      |      |            | GEIGER RD<br>From East |      |      |      |            | KAPOLEI PKWY<br>From South |      |      |      |            | GEIGER RD<br>From West |      |      |      |            |            |
|------------------------------------------------------------|----------------------------|------|------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|------|------------|------------------------|------|------|------|------------|------------|
| Start Time                                                 | Right                      | Thru | Left | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                            |      |      |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                            |      |      |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| 07:00 AM                                                   | 10                         | 119  | 29   | 1    | 159        | 38                     | 46   | 20   | 13   | 117        | 20                         | 130  | 70   | 0    | 220        | 46                     | 22   | 3    | 4    | 75         | 571        |
| 07:15 AM                                                   | 10                         | 146  | 44   | 3    | 203        | 44                     | 55   | 23   | 22   | 144        | 31                         | 184  | 94   | 0    | 309        | 44                     | 34   | 2    | 9    | 89         | 745        |
| 07:30 AM                                                   | 4                          | 138  | 36   | 2    | 180        | 53                     | 61   | 28   | 8    | 150        | 47                         | 230  | 90   | 0    | 367        | 46                     | 33   | 3    | 0    | 82         | 779        |
| 07:45 AM                                                   | 18                         | 98   | 37   | 0    | 153        | 60                     | 48   | 17   | 5    | 130        | 41                         | 173  | 82   | 3    | 299        | 31                     | 21   | 0    | 2    | 54         | 636        |
| Total Volume                                               | 42                         | 501  | 146  | 6    | 695        | 195                    | 210  | 88   | 48   | 541        | 139                        | 717  | 336  | 3    | 1195       | 167                    | 110  | 8    | 15   | 300        | 2731       |
| % App. Total                                               | 6                          | 72.1 | 21   | 0.9  |            | 36                     | 38.8 | 16.3 | 8.9  |            | 11.6                       | 60   | 28.1 | 0.3  |            | 55.7                   | 36.7 | 2.7  | 5    |            |            |
| PHF                                                        | .583                       | .858 | .830 | .500 | .856       | .813                   | .861 | .786 | .545 | .902       | .739                       | .779 | .894 | .250 | .814       | .908                   | .809 | .667 | .417 | .843       | .876       |



# Austin Tsutsumi & Associates

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Honolulu, HI 96817-5031

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File Name : AM\_Kualakai Pkwy - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

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## Groups Printed- Unshifted

| Start Time  | KUALAKAI PKWY<br>From North |      |      |      | KAPOLEI PKWY<br>From East |      |      |      | KUALAKAI PKWY<br>From South |      |      |      | KAPOLEI PKWY<br>From West |      |      |      | Int. Total |
|-------------|-----------------------------|------|------|------|---------------------------|------|------|------|-----------------------------|------|------|------|---------------------------|------|------|------|------------|
|             | Right                       | Thru | Left | Peds | Right                     | Thru | Left | Peds | Right                       | Thru | Left | Peds | Right                     | Thru | Left | Peds |            |
| 06:00 AM    | 16                          | 0    | 17   | 0    | 58                        | 46   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 43   | 97   | 0    | 277        |
| 06:15 AM    | 22                          | 0    | 27   | 0    | 62                        | 59   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 64   | 79   | 0    | 313        |
| 06:30 AM    | 28                          | 0    | 37   | 2    | 72                        | 61   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 69   | 96   | 0    | 365        |
| 06:45 AM    | 37                          | 0    | 44   | 0    | 50                        | 80   | 0    | 1    | 0                           | 0    | 0    | 0    | 0                         | 62   | 82   | 0    | 356        |
| Total       | 103                         | 0    | 125  | 2    | 242                       | 246  | 0    | 1    | 0                           | 0    | 0    | 0    | 0                         | 238  | 354  | 0    | 1311       |
| 07:00 AM    | 42                          | 0    | 33   | 2    | 58                        | 107  | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 76   | 94   | 0    | 412        |
| 07:15 AM    | 53                          | 0    | 54   | 1    | 77                        | 144  | 0    | 1    | 0                           | 0    | 0    | 0    | 0                         | 94   | 66   | 0    | 490        |
| 07:30 AM    | 65                          | 0    | 46   | 1    | 96                        | 195  | 0    | 3    | 0                           | 0    | 0    | 0    | 0                         | 90   | 83   | 0    | 579        |
| 07:45 AM    | 48                          | 0    | 37   | 1    | 129                       | 158  | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 104  | 90   | 0    | 567        |
| Total       | 208                         | 0    | 170  | 5    | 360                       | 604  | 0    | 4    | 0                           | 0    | 0    | 0    | 0                         | 364  | 333  | 0    | 2048       |
| Grand Total | 311                         | 0    | 295  | 7    | 602                       | 850  | 0    | 5    | 0                           | 0    | 0    | 0    | 0                         | 602  | 687  | 0    | 3359       |
| Apprch %    | 50.7                        | 0    | 48.1 | 1.1  | 41.3                      | 58.3 | 0    | 0.3  | 0                           | 0    | 0    | 0    | 0                         | 46.7 | 53.3 | 0    |            |
| Total %     | 9.3                         | 0    | 8.8  | 0.2  | 17.9                      | 25.3 | 0    | 0.1  | 0                           | 0    | 0    | 0    | 0                         | 17.9 | 20.5 | 0    |            |

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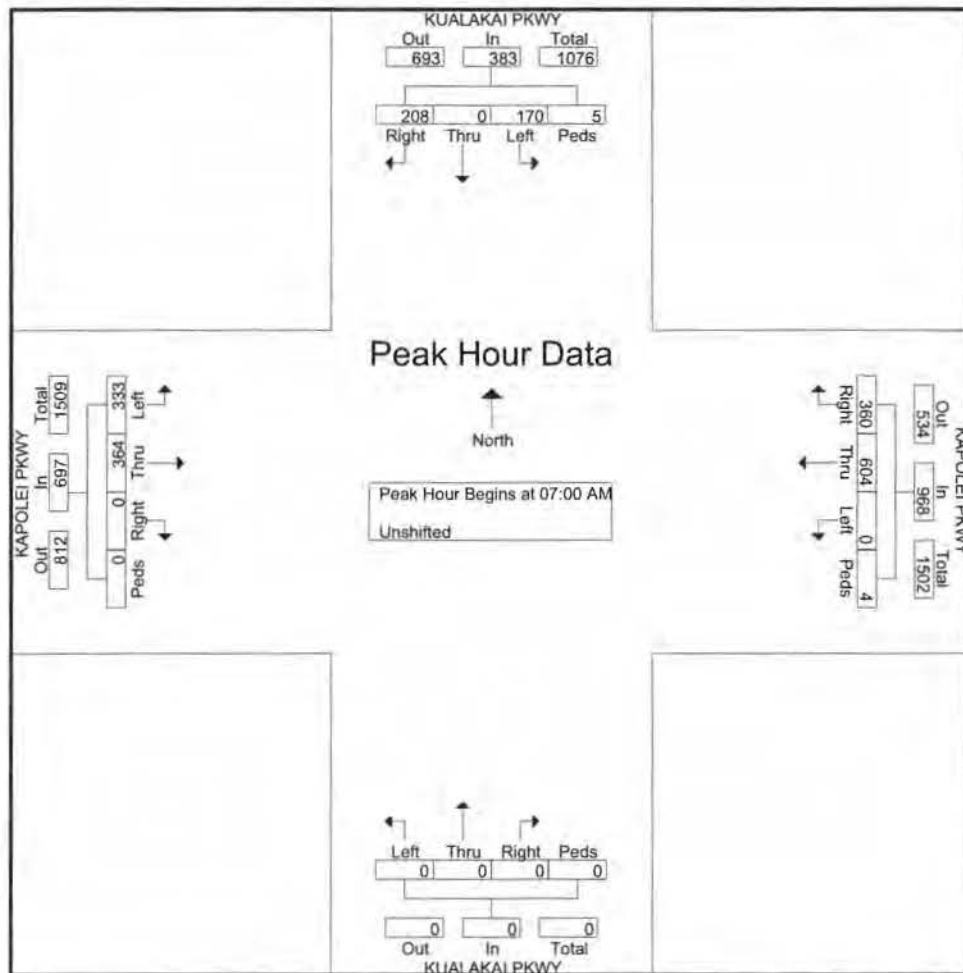
File Name : AM\_Kualakai Pkwy - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

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|                                                            | KUALAKAI PKWY<br>From North |      |      |      |           | KAPOLEI PKWY<br>From East |      |      |      |           | KUALAKAI PKWY<br>From South |      |      |      |           | KAPOLEI PKWY<br>From West |      |      |      |           |            |
|------------------------------------------------------------|-----------------------------|------|------|------|-----------|---------------------------|------|------|------|-----------|-----------------------------|------|------|------|-----------|---------------------------|------|------|------|-----------|------------|
| Start Time                                                 | Right                       | Thru | Left | Peds | App Total | Right                     | Thru | Left | Peds | App Total | Right                       | Thru | Left | Peds | App Total | Right                     | Thru | Left | Peds | App Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                             |      |      |      |           |                           |      |      |      |           |                             |      |      |      |           |                           |      |      |      |           |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                             |      |      |      |           |                           |      |      |      |           |                             |      |      |      |           |                           |      |      |      |           |            |
| 07:00 AM                                                   | 42                          | 0    | 33   | 2    | 77        | 58                        | 107  | 0    | 0    | 165       | 0                           | 0    | 0    | 0    | 0         | 0                         | 76   | 94   | 0    | 170       | 412        |
| 07:15 AM                                                   | 53                          | 0    | 54   | 1    | 108       | 77                        | 144  | 0    | 1    | 222       | 0                           | 0    | 0    | 0    | 0         | 0                         | 94   | 66   | 0    | 160       | 490        |
| 07:30 AM                                                   | 65                          | 0    | 46   | 1    | 112       | 96                        | 195  | 0    | 3    | 294       | 0                           | 0    | 0    | 0    | 0         | 0                         | 90   | 83   | 0    | 173       | 579        |
| 07:45 AM                                                   | 48                          | 0    | 37   | 1    | 86        | 129                       | 158  | 0    | 0    | 287       | 0                           | 0    | 0    | 0    | 0         | 0                         | 104  | 90   | 0    | 194       | 567        |
| Total Volume                                               | 208                         | 0    | 170  | 5    | 383       | 360                       | 604  | 0    | 4    | 968       | 0                           | 0    | 0    | 0    | 0         | 0                         | 364  | 333  | 0    | 697       | 2048       |
| % App. Total                                               | 54.3                        | 0    | 44.4 | 1.3  |           | 37.2                      | 62.4 | 0    | 0.4  |           | 0                           | 0    | 0    | 0    |           | 0                         | 52.2 | 47.8 | 0    |           |            |
| PHF                                                        | .800                        | .000 | .787 | .625 | .855      | .698                      | .774 | .000 | .333 | .823      | .000                        | .000 | .000 | .000 | .000      | .000                      | .875 | .886 | .000 | .898      | .884       |



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File Name : AM\_Phillipine Sea - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | PHILLIPINE SEA<br>From North |      |      |       | RENTON RD<br>From East |      |      |       | PHILLIPINE SEA<br>From South |      |      |       | RENTON RD<br>From West |      |      |       | Int. Total |
|-------------|------------------------------|------|------|-------|------------------------|------|------|-------|------------------------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                         | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                         | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 06:00 AM    | 0                            | 0    | 0    | 0     | 0                      | 1    | 44   | 0     | 20                           | 0    | 0    | 0     | 0                      | 0    | 0    | 0     | 65         |
| 06:15 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 36   | 0     | 20                           | 0    | 0    | 0     | 0                      | 0    | 0    | 0     | 56         |
| 06:30 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 44   | 0     | 20                           | 0    | 0    | 0     | 1                      | 0    | 0    | 0     | 65         |
| 06:45 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 61   | 0     | 19                           | 0    | 1    | 0     | 0                      | 0    | 0    | 0     | 81         |
| Total       | 0                            | 0    | 0    | 0     | 0                      | 1    | 185  | 0     | 79                           | 0    | 1    | 0     | 1                      | 0    | 0    | 0     | 267        |
| 07:00 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 51   | 0     | 20                           | 0    | 0    | 0     | 0                      | 0    | 0    | 0     | 71         |
| 07:15 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 42   | 0     | 21                           | 0    | 1    | 0     | 0                      | 0    | 0    | 0     | 64         |
| 07:30 AM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 46   | 0     | 21                           | 0    | 0    | 0     | 0                      | 0    | 0    | 0     | 67         |
| 07:45 AM    | 0                            | 0    | 0    | 0     | 0                      | 1    | 42   | 0     | 18                           | 0    | 1    | 0     | 0                      | 0    | 0    | 0     | 62         |
| Total       | 0                            | 0    | 0    | 0     | 0                      | 1    | 181  | 0     | 80                           | 0    | 2    | 0     | 0                      | 0    | 0    | 0     | 264        |
| Grand Total | 0                            | 0    | 0    | 0     | 0                      | 2    | 366  | 0     | 159                          | 0    | 3    | 0     | 1                      | 0    | 0    | 0     | 531        |
| Apprch %    | 0                            | 0    | 0    | 0     | 0                      | 0.5  | 99.5 | 0     | 98.1                         | 0    | 1.9  | 0     | 100                    | 0    | 0    | 0     |            |
| Total %     | 0                            | 0    | 0    | 0     | 0                      | 0.4  | 68.9 | 0     | 29.9                         | 0    | 0.6  | 0     | 0.2                    | 0    | 0    | 0     |            |

# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521

Honolulu, HI 96817-5031

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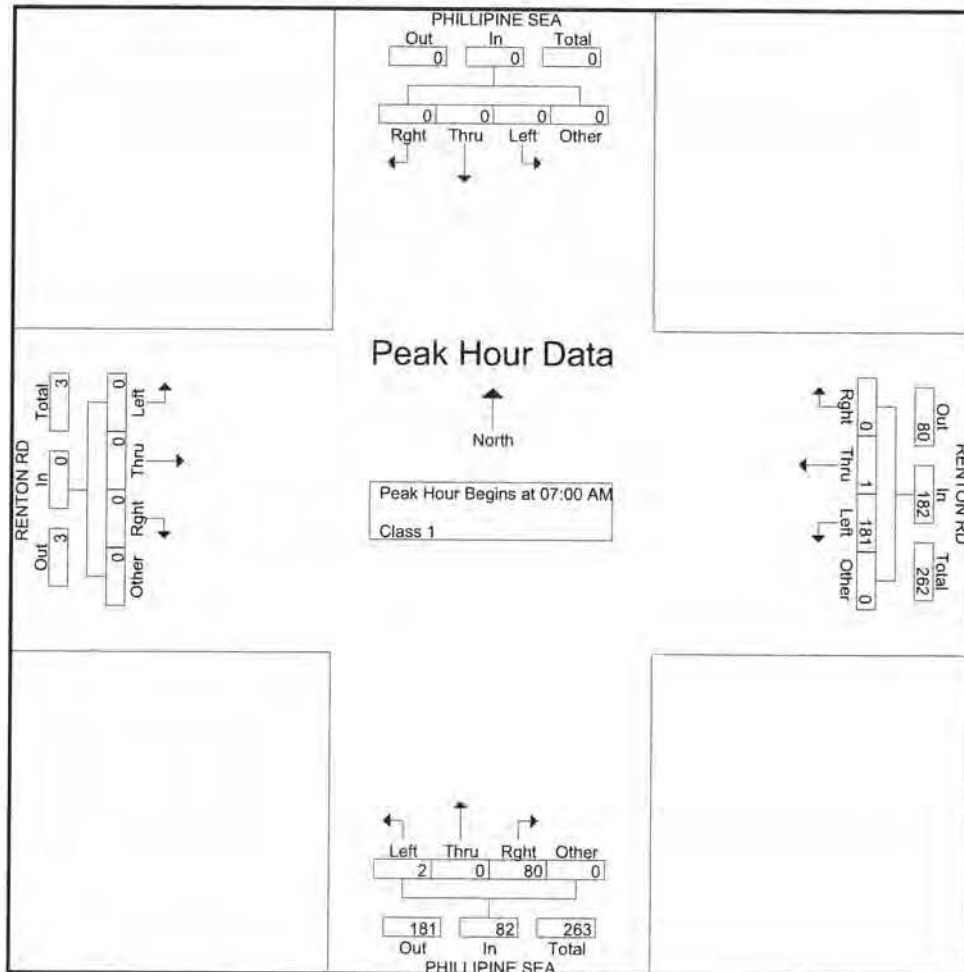
File Name : AM\_Phillipine Sea - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | PHILLIPINE SEA<br>From North |      |      |       |            | RENTON RD<br>From East |      |      |       |            | PHILLIPINE SEA<br>From South |      |      |       |            | RENTON RD<br>From West |      |      |       |            |             |
|------------------------------------------------------------|------------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|-------------|
| Start Time                                                 | Rght                         | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | Rght                         | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | In/L. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                              |      |      |       |            |                        |      |      |       |            |                              |      |      |       |            |                        |      |      |       |            |             |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                              |      |      |       |            |                        |      |      |       |            |                              |      |      |       |            |                        |      |      |       |            |             |
| 07:00 AM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 51   | 0     | 51         | 20                           | 0    | 0    | 0     | 20         | 0                      | 0    | 0    | 0     | 0          | 71          |
| 07:15 AM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 42   | 0     | 42         | 21                           | 0    | 1    | 0     | 22         | 0                      | 0    | 0    | 0     | 0          | 64          |
| 07:30 AM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 46   | 0     | 46         | 21                           | 0    | 0    | 0     | 21         | 0                      | 0    | 0    | 0     | 0          | 67          |
| 07:45 AM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 1    | 42   | 0     | 43         | 18                           | 0    | 1    | 0     | 19         | 0                      | 0    | 0    | 0     | 0          | 62          |
| Total Volume                                               | 0                            | 0    | 0    | 0     | 0          | 0                      | 1    | 181  | 0     | 182        | 80                           | 0    | 2    | 0     | 82         | 0                      | 0    | 0    | 0     | 0          | 264         |
| % App. Total                                               | 0                            | 0    | 0    | 0     | 0          | 0                      | 0.5  | 99.5 | 0     | 97.6       | 0                            | 0    | 2.4  | 0     | 99.6       | 0                      | 0    | 0    | 0     | 0          | 99.6        |
| PHF                                                        | .000                         | .000 | .000 | .000  | .000       | .000                   | .250 | .887 | .000  | .892       | .952                         | .000 | .500 | .000  | .932       | .000                   | .000 | .000 | .000  | .000       | .930        |



# Austin Tsutsumi & Associates

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File Name : AM\_Phillipine Sea - Roosevelt Ave

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | PHILLIPINE SEA<br>From North |      |      |       | ROOSEVELT AVE<br>From East |      |      |       | PHILLIPINE SEA<br>From South |      |      |       | ROOSEVELT AVE<br>From West |      |      |       | Int. Total |
|-------------|------------------------------|------|------|-------|----------------------------|------|------|-------|------------------------------|------|------|-------|----------------------------|------|------|-------|------------|
|             | Rght                         | Thru | Left | Other | Rght                       | Thru | Left | Other | Rght                         | Thru | Left | Other | Rght                       | Thru | Left | Other |            |
| 06:00 AM    | 44                           | 0    | 1    | 0     | 0                          | 73   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 37   | 20   | 0     | 175        |
| 06:15 AM    | 30                           | 0    | 4    | 0     | 0                          | 78   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 49   | 15   | 0     | 176        |
| 06:30 AM    | 42                           | 0    | 7    | 0     | 1                          | 123  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 68   | 17   | 0     | 258        |
| 06:45 AM    | 55                           | 0    | 3    | 0     | 2                          | 108  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 67   | 18   | 0     | 253        |
| Total       | 171                          | 0    | 15   | 0     | 3                          | 382  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 221  | 70   | 0     | 862        |
| 07:00 AM    | 48                           | 0    | 2    | 0     | 2                          | 100  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 55   | 16   | 0     | 223        |
| 07:15 AM    | 39                           | 0    | 3    | 0     | 3                          | 155  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 80   | 15   | 0     | 295        |
| 07:30 AM    | 40                           | 0    | 4    | 0     | 4                          | 141  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 65   | 17   | 0     | 271        |
| 07:45 AM    | 39                           | 0    | 2    | 0     | 5                          | 134  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 67   | 16   | 0     | 263        |
| Total       | 166                          | 0    | 11   | 0     | 14                         | 530  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 267  | 64   | 0     | 1052       |
| Grand Total | 337                          | 0    | 26   | 0     | 17                         | 912  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 488  | 134  | 0     | 1914       |
| Apprch %    | 92.8                         | 0    | 7.2  | 0     | 1.8                        | 98.2 | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 78.5 | 21.5 | 0     |            |
| Total %     | 17.6                         | 0    | 1.4  | 0     | 0.9                        | 47.6 | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 25.5 | 7    | 0     |            |

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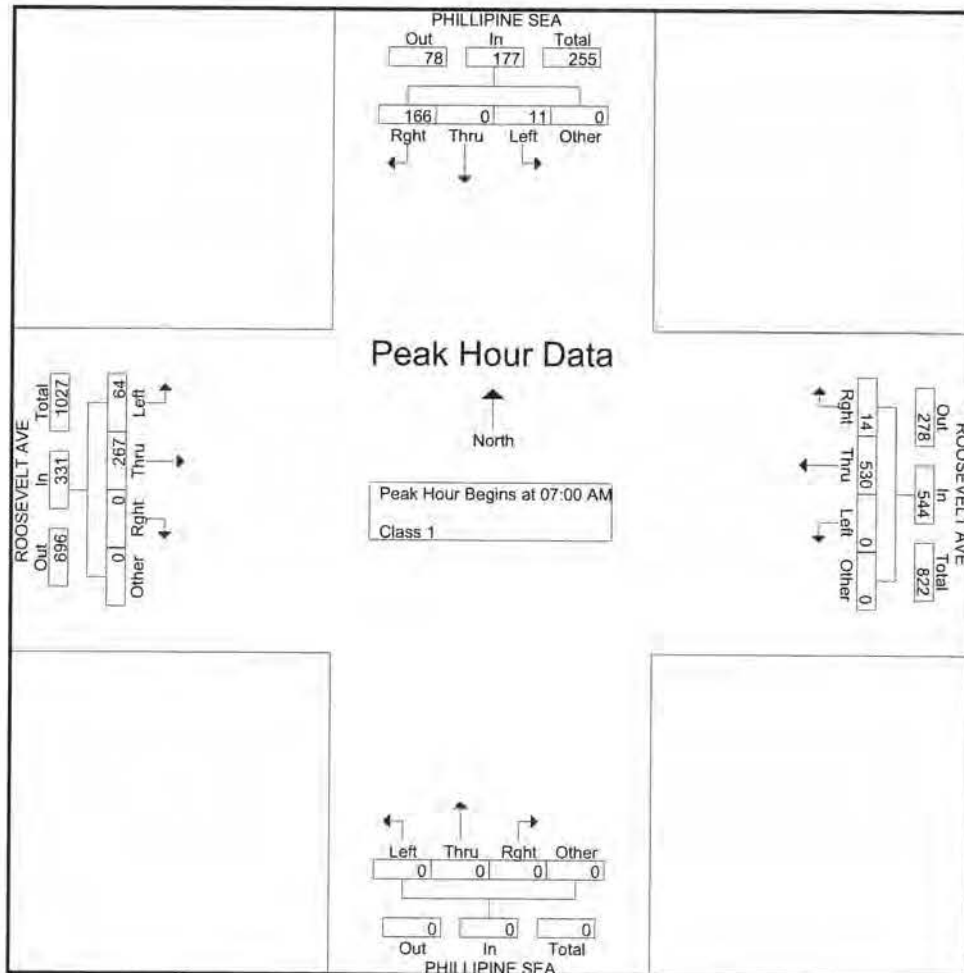
File Name : AM\_Phillipine Sea - Roosevelt Ave

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | PHILLIPINE SEA<br>From North |      |      |       |            | ROOSEVELT AVE<br>From East |      |      |       |            | PHILLIPINE SEA<br>From South |      |      |       |            | ROOSEVELT AVE<br>From West |      |      |       |            |            |
|------------------------------------------------------------|------------------------------|------|------|-------|------------|----------------------------|------|------|-------|------------|------------------------------|------|------|-------|------------|----------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                        | Thru | Left | Other | App. Total | Right                      | Thru | Left | Other | App. Total | Right                        | Thru | Left | Other | App. Total | Right                      | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                              |      |      |       |            |                            |      |      |       |            |                              |      |      |       |            |                            |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                              |      |      |       |            |                            |      |      |       |            |                              |      |      |       |            |                            |      |      |       |            |            |
| 07:00 AM                                                   | 48                           | 0    | 2    | 0     | 50         | 2                          | 100  | 0    | 0     | 102        | 0                            | 0    | 0    | 0     | 0          | 0                          | 55   | 16   | 0     | 71         | 223        |
| 07:15 AM                                                   | 39                           | 0    | 3    | 0     | 42         | 3                          | 155  | 0    | 0     | 158        | 0                            | 0    | 0    | 0     | 0          | 0                          | 80   | 15   | 0     | 95         | 295        |
| 07:30 AM                                                   | 40                           | 0    | 4    | 0     | 44         | 4                          | 141  | 0    | 0     | 145        | 0                            | 0    | 0    | 0     | 0          | 0                          | 65   | 17   | 0     | 82         | 271        |
| 07:45 AM                                                   | 39                           | 0    | 2    | 0     | 41         | 5                          | 134  | 0    | 0     | 139        | 0                            | 0    | 0    | 0     | 0          | 0                          | 67   | 16   | 0     | 83         | 263        |
| Total Volume                                               | 166                          | 0    | 11   | 0     | 177        | 14                         | 530  | 0    | 0     | 544        | 0                            | 0    | 0    | 0     | 0          | 0                          | 267  | 64   | 0     | 331        | 1052       |
| % App. Total                                               | 93.8                         | 0    | 6.2  | 0     |            | 2.6                        | 97.4 | 0    | 0     |            | 0                            | 0    | 0    | 0     |            | 0                          | 80.7 | 19.3 | 0     |            |            |
| PHF                                                        | .865                         | .000 | .688 | .000  | .885       | .700                       | .855 | .000 | .000  | .861       | .000                         | .000 | .000 | .000  | .000       | .000                       | .834 | .941 | .000  | .871       | .892       |



# Austin Tsutsumi & Associates

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File Name : AM\_Renton Rd - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

Groups Printed- Unshifted

| Start Time  | RENTON RD<br>From North |      |      |      | KAPOLEI PKWY<br>From East |      |      |      | RENTON RD<br>From South |      |      |      | KAPOLEI PKWY<br>From West |      |      |      | Int. Total |
|-------------|-------------------------|------|------|------|---------------------------|------|------|------|-------------------------|------|------|------|---------------------------|------|------|------|------------|
|             | Right                   | Thru | Left | Peds | Right                     | Thru | Left | Peds | Right                   | Thru | Left | Peds | Right                     | Thru | Left | Peds |            |
| 06:00 AM    | 26                      | 20   | 9    | 1    | 17                        | 74   | 9    | 0    | 1                       | 14   | 6    | 1    | 7                         | 30   | 18   | 0    | 233        |
| 06:15 AM    | 22                      | 20   | 19   | 2    | 35                        | 103  | 8    | 1    | 5                       | 12   | 3    | 0    | 11                        | 56   | 29   | 0    | 326        |
| 06:30 AM    | 32                      | 22   | 21   | 1    | 29                        | 88   | 9    | 0    | 3                       | 12   | 8    | 1    | 19                        | 50   | 35   | 0    | 330        |
| 06:45 AM    | 33                      | 29   | 36   | 4    | 51                        | 95   | 7    | 0    | 5                       | 18   | 3    | 0    | 22                        | 50   | 29   | 0    | 382        |
| Total       | 113                     | 91   | 85   | 8    | 132                       | 360  | 33   | 1    | 14                      | 56   | 20   | 2    | 59                        | 186  | 111  | 0    | 1271       |
| 07:00 AM    | 47                      | 24   | 61   | 3    | 57                        | 129  | 18   | 2    | 4                       | 14   | 5    | 2    | 16                        | 55   | 47   | 1    | 485        |
| 07:15 AM    | 57                      | 22   | 85   | 1    | 109                       | 168  | 9    | 1    | 3                       | 17   | 9    | 0    | 10                        | 76   | 55   | 1    | 623        |
| 07:30 AM    | 104                     | 30   | 83   | 0    | 118                       | 240  | 11   | 1    | 4                       | 20   | 3    | 1    | 9                         | 82   | 62   | 0    | 768        |
| 07:45 AM    | 82                      | 32   | 59   | 2    | 66                        | 168  | 5    | 0    | 5                       | 10   | 7    | 0    | 7                         | 76   | 49   | 0    | 568        |
| Total       | 290                     | 108  | 288  | 6    | 350                       | 705  | 43   | 4    | 16                      | 61   | 24   | 3    | 42                        | 289  | 213  | 2    | 2444       |
| Grand Total | 403                     | 199  | 373  | 14   | 482                       | 1065 | 76   | 5    | 30                      | 117  | 44   | 5    | 101                       | 475  | 324  | 2    | 3715       |
| Apprch %    | 40.7                    | 20.1 | 37.7 | 1.4  | 29.6                      | 65.4 | 4.7  | 0.3  | 15.3                    | 59.7 | 22.4 | 2.6  | 11.2                      | 52.7 | 35.9 | 0.2  |            |
| Total %     | 10.8                    | 5.4  | 10   | 0.4  | 13                        | 28.7 | 2    | 0.1  | 0.8                     | 3.1  | 1.2  | 0.1  | 2.7                       | 12.8 | 8.7  | 0.1  |            |

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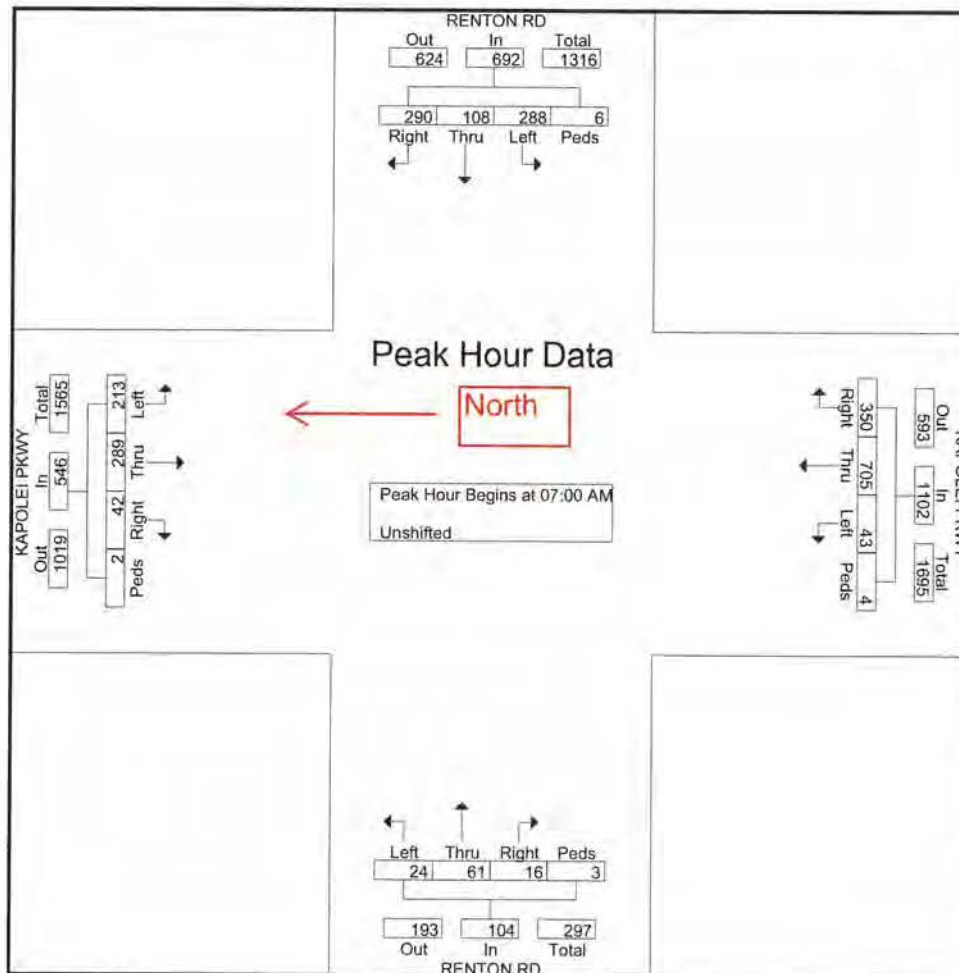
File Name : AM\_Renton Rd - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | RENTON RD<br>From North |      |      |      |            | KAPOLEI PKWY<br>From East |      |      |      |            | RENTON RD<br>From South |      |      |      |            | KAPOLEI PKWY<br>From West |      |      |      |            |            |
|------------------------------------------------------------|-------------------------|------|------|------|------------|---------------------------|------|------|------|------------|-------------------------|------|------|------|------------|---------------------------|------|------|------|------------|------------|
| Start Time                                                 | Right                   | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Right                   | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                         |      |      |      |            |                           |      |      |      |            |                         |      |      |      |            |                           |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                         |      |      |      |            |                           |      |      |      |            |                         |      |      |      |            |                           |      |      |      |            |            |
| 07:00 AM                                                   | 47                      | 24   | 61   | 3    | 135        | 57                        | 129  | 18   | 2    | 206        | 4                       | 14   | 5    | 2    | 25         | 16                        | 55   | 47   | 1    | 119        | 485        |
| 07:15 AM                                                   | 57                      | 22   | 85   | 1    | 165        | 109                       | 168  | 9    | 1    | 287        | 3                       | 17   | 9    | 0    | 29         | 10                        | 76   | 55   | 1    | 142        | 623        |
| 07:30 AM                                                   | 104                     | 30   | 83   | 0    | 217        | 118                       | 240  | 11   | 1    | 370        | 4                       | 20   | 3    | 1    | 28         | 9                         | 82   | 62   | 0    | 153        | 768        |
| 07:45 AM                                                   | 82                      | 32   | 59   | 2    | 175        | 66                        | 168  | 5    | 0    | 239        | 5                       | 10   | 7    | 0    | 22         | 7                         | 76   | 49   | 0    | 132        | 568        |
| Total Volume                                               | 290                     | 108  | 288  | 6    | 692        | 350                       | 705  | 43   | 4    | 1102       | 16                      | 61   | 24   | 3    | 104        | 42                        | 289  | 213  | 2    | 546        | 2444       |
| % App. Total                                               | 41.9                    | 15.6 | 41.6 | 0.9  |            | 31.8                      | 64   | 3.9  | 0.4  |            | 15.4                    | 58.7 | 23.1 | 2.9  |            | 7.7                       | 52.9 | 39   | 0.4  |            |            |
| PHF                                                        | .697                    | .844 | .847 | .500 | .797       | .742                      | .734 | .597 | .500 | .745       | .800                    | .763 | .667 | .375 | .897       | .656                      | .881 | .859 | .500 | .892       | .796       |



# Austin Tsutsumi & Associates

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File Name : AM\_WWTP Dwy #1 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | WWTP DWY #1<br>From North |      |      |       | GEIGER RD<br>From East |      |      |       | From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 06:00 AM    | 0                         | 0    | 0    | 0     | 0                      | 79   | 10   | 0     | 0          | 0    | 1    | 0     | 0                      | 35   | 0    | 0     | 125        |
| 06:15 AM    | 0                         | 0    | 0    | 0     | 0                      | 98   | 18   | 0     | 2          | 0    | 0    | 0     | 1                      | 48   | 0    | 0     | 167        |
| 06:30 AM    | 0                         | 0    | 0    | 0     | 0                      | 142  | 5    | 0     | 8          | 0    | 1    | 0     | 3                      | 52   | 0    | 0     | 211        |
| 06:45 AM    | 0                         | 0    | 0    | 0     | 0                      | 141  | 3    | 0     | 19         | 0    | 0    | 0     | 0                      | 73   | 0    | 0     | 236        |
| Total       | 0                         | 0    | 0    | 0     | 0                      | 460  | 36   | 0     | 29         | 0    | 2    | 0     | 4                      | 208  | 0    | 0     | 739        |
| 07:00 AM    | 0                         | 0    | 0    | 0     | 0                      | 120  | 1    | 0     | 6          | 0    | 2    | 0     | 0                      | 57   | 0    | 0     | 186        |
| 07:15 AM    | 0                         | 0    | 0    | 0     | 0                      | 160  | 4    | 0     | 3          | 0    | 1    | 0     | 1                      | 77   | 0    | 0     | 246        |
| 07:30 AM    | 0                         | 0    | 0    | 0     | 0                      | 160  | 2    | 0     | 4          | 0    | 0    | 0     | 0                      | 75   | 0    | 0     | 241        |
| 07:45 AM    | 0                         | 0    | 0    | 0     | 0                      | 152  | 1    | 0     | 2          | 0    | 0    | 0     | 0                      | 62   | 0    | 0     | 217        |
| Total       | 0                         | 0    | 0    | 0     | 0                      | 592  | 8    | 0     | 15         | 0    | 3    | 0     | 1                      | 271  | 0    | 0     | 890        |
| Grand Total | 0                         | 0    | 0    | 0     | 0                      | 1052 | 44   | 0     | 44         | 0    | 5    | 0     | 5                      | 479  | 0    | 0     | 1629       |
| Apprch %    | 0                         | 0    | 0    | 0     | 0                      | 96   | 4    | 0     | 89.8       | 0    | 10.2 | 0     | 1                      | 99   | 0    | 0     |            |
| Total %     | 0                         | 0    | 0    | 0     | 0                      | 64.6 | 2.7  | 0     | 2.7        | 0    | 0.3  | 0     | 0.3                    | 29.4 | 0    | 0     |            |

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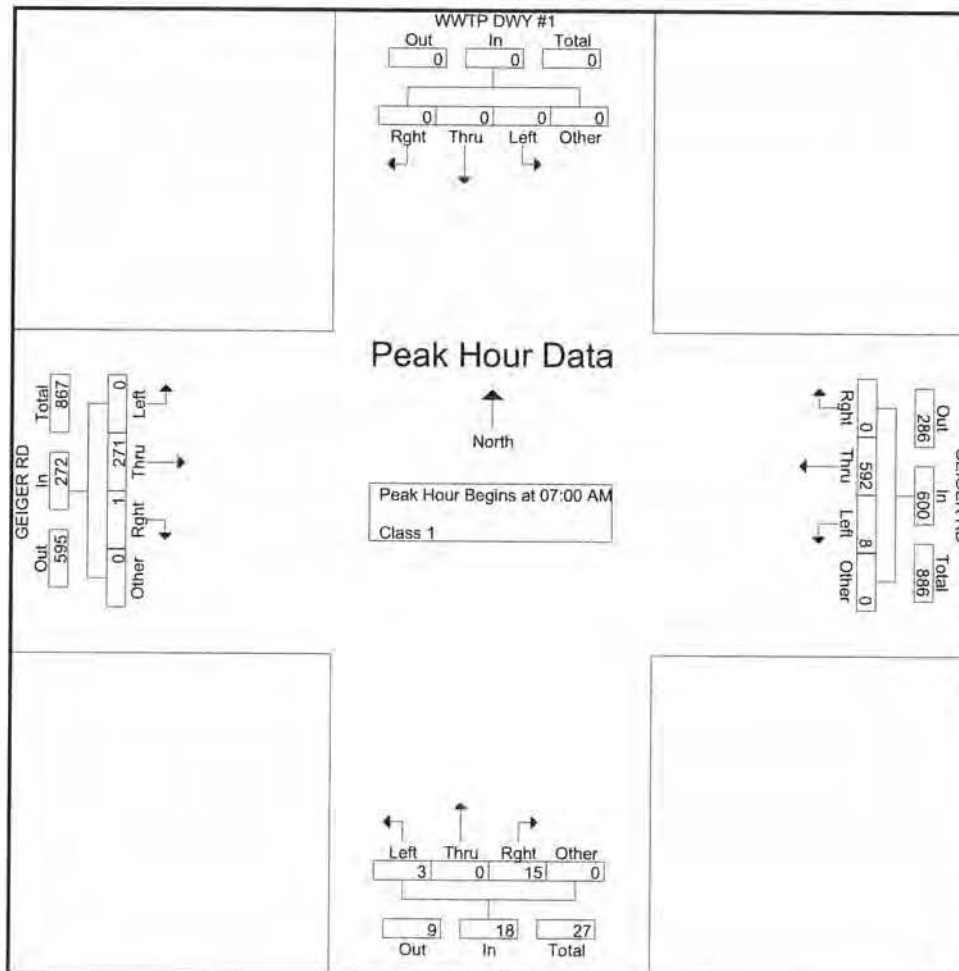
File Name : AM\_WWTP Dwy #1 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | WWTP DWY #1<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Rght                      | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | Rght       | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 07:00 AM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 120  | 1    | 0     | 121        | 6          | 0    | 2    | 0     | 8          | 0                      | 57   | 0    | 0     | 57         | 186        |
| 07:15 AM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 160  | 4    | 0     | 164        | 3          | 0    | 1    | 0     | 4          | 1                      | 77   | 0    | 0     | 78         | 246        |
| 07:30 AM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 160  | 2    | 0     | 162        | 4          | 0    | 0    | 0     | 4          | 0                      | 75   | 0    | 0     | 75         | 241        |
| 07:45 AM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 152  | 1    | 0     | 153        | 2          | 0    | 0    | 0     | 2          | 0                      | 62   | 0    | 0     | 62         | 217        |
| Total Volume                                               | 0                         | 0    | 0    | 0     | 0          | 0                      | 592  | 8    | 0     | 600        | 15         | 0    | 3    | 0     | 18         | 1                      | 271  | 0    | 0     | 272        | 890        |
| % App. Total                                               | 0                         | 0    | 0    | 0     | 0          | 0                      | 98.7 | 1.3  | 0     |            | 83.3       | 0    | 16.7 | 0     |            | 0.4                    | 99.6 | 0    | 0     |            |            |
| PHF                                                        | .000                      | .000 | .000 | .000  | .000       | .000                   | .925 | .500 | .000  | .915       | .625       | .000 | .375 | .000  | .563       | .250                   | .880 | .000 | .000  | .872       | .904       |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM\_WWTP Dwy #2 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | WWTP DWY #2<br>From North |      |      |       | GEIGER RD<br>From East |      |      |       | From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 06:00 AM    | 0                         | 0    | 1    | 0     | 1                      | 69   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 35   | 1    | 0     | 107        |
| 06:15 AM    | 0                         | 0    | 1    | 0     | 6                      | 99   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 48   | 2    | 0     | 156        |
| 06:30 AM    | 1                         | 0    | 0    | 0     | 15                     | 124  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 53   | 3    | 0     | 196        |
| 06:45 AM    | 0                         | 0    | 2    | 0     | 12                     | 123  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 71   | 6    | 0     | 214        |
| Total       | 1                         | 0    | 4    | 0     | 34                     | 415  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 207  | 12   | 0     | 673        |
| 07:00 AM    | 2                         | 0    | 1    | 0     | 0                      | 120  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 56   | 0    | 0     | 179        |
| 07:15 AM    | 3                         | 0    | 2    | 0     | 0                      | 155  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 77   | 0    | 0     | 237        |
| 07:30 AM    | 2                         | 0    | 1    | 0     | 1                      | 161  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 75   | 0    | 0     | 240        |
| 07:45 AM    | 3                         | 0    | 2    | 0     | 3                      | 143  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 60   | 0    | 0     | 211        |
| Total       | 10                        | 0    | 6    | 0     | 4                      | 579  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 268  | 0    | 0     | 867        |
| Grand Total | 11                        | 0    | 10   | 0     | 38                     | 994  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 475  | 12   | 0     | 1540       |
| Apprch %    | 52.4                      | 0    | 47.6 | 0     | 3.7                    | 96.3 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 97.5 | 2.5  | 0     |            |
| Total %     | 0.7                       | 0    | 0.6  | 0     | 2.5                    | 64.5 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 30.8 | 0.8  | 0     |            |

# Austin Tsutsumi & Associates

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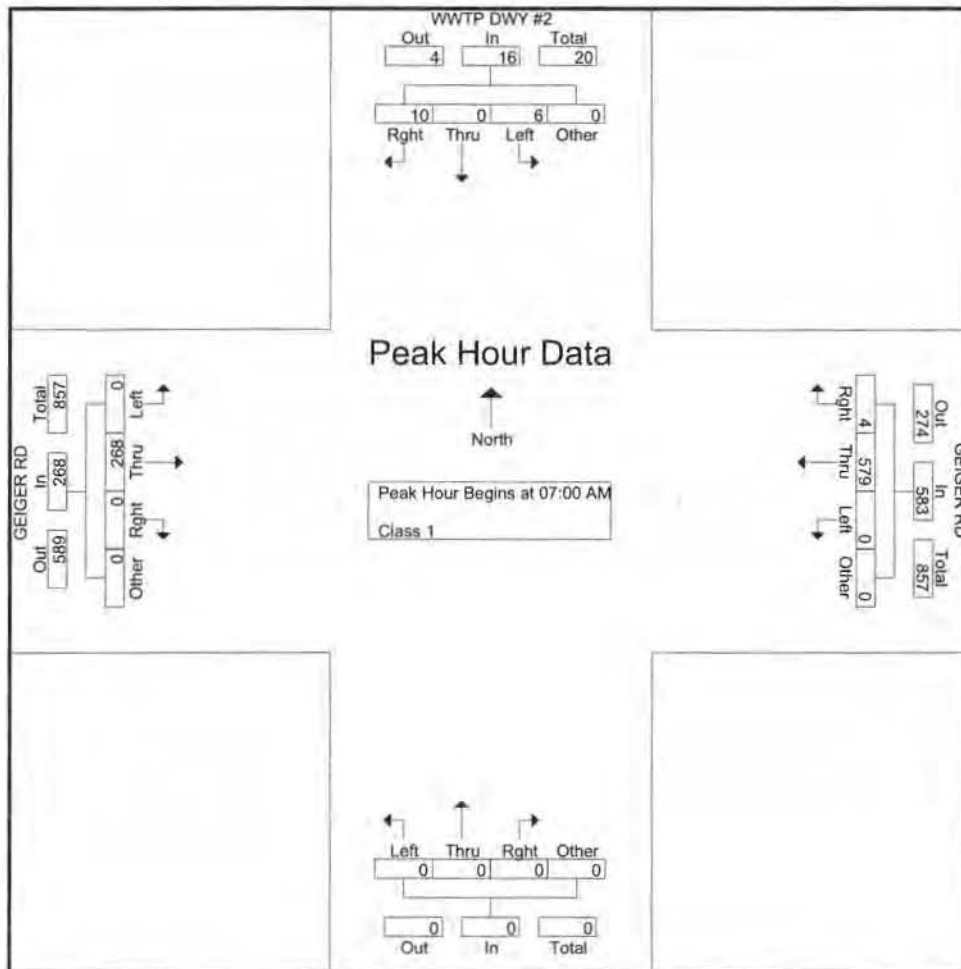
File Name : AM\_WWTP Dwy #2 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | WWTP DWY #2<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                     | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 07:00 AM                                                   | 2                         | 0    | 1    | 0     | 3          | 0                      | 120  | 0    | 0     | 120        | 0          | 0    | 0    | 0     | 0          | 0                      | 56   | 0    | 0     | 56         | 179        |
| 07:15 AM                                                   | 3                         | 0    | 2    | 0     | 5          | 0                      | 155  | 0    | 0     | 155        | 0          | 0    | 0    | 0     | 0          | 0                      | 77   | 0    | 0     | 77         | 237        |
| 07:30 AM                                                   | 2                         | 0    | 1    | 0     | 3          | 1                      | 161  | 0    | 0     | 162        | 0          | 0    | 0    | 0     | 0          | 0                      | 75   | 0    | 0     | 75         | 240        |
| 07:45 AM                                                   | 3                         | 0    | 2    | 0     | 5          | 3                      | 143  | 0    | 0     | 146        | 0          | 0    | 0    | 0     | 0          | 0                      | 60   | 0    | 0     | 60         | 211        |
| Total Volume                                               | 10                        | 0    | 6    | 0     | 16         | 4                      | 579  | 0    | 0     | 583        | 0          | 0    | 0    | 0     | 0          | 0                      | 268  | 0    | 0     | 268        | 867        |
| % App. Total                                               | 62.5                      | 0    | 37.5 | 0     |            | 0.7                    | 99.3 | 0    | 0     |            | 0          | 0    | 0    | 0     | 0          | 0                      | 100  | 0    | 0     |            |            |
| PHF                                                        | .833                      | .000 | .750 | .000  | .800       | .333                   | .899 | .000 | .000  | .900       | .000       | .000 | .000 | .000  | .000       | .000                   | .870 | .000 | .000  | .870       | .903       |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
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Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : AM\_WWTP Dwy #3 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | WWTP DWY #3<br>From North |      |      |       | GEIGER RD<br>From East |      |      |       | From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 06:00 AM    | 0                         | 0    | 0    | 0     | 0                      | 70   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 36   | 0    | 0     | 106        |
| 06:15 AM    | 0                         | 0    | 0    | 0     | 0                      | 99   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 50   | 0    | 0     | 149        |
| 06:30 AM    | 0                         | 0    | 0    | 0     | 0                      | 126  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 61   | 0    | 0     | 187        |
| 06:45 AM    | 0                         | 0    | 0    | 0     | 0                      | 120  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 73   | 1    | 0     | 194        |
| Total       | 0                         | 0    | 0    | 0     | 0                      | 415  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 220  | 1    | 0     | 636        |
| 07:00 AM    | 0                         | 0    | 0    | 0     | 1                      | 118  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 57   | 0    | 0     | 176        |
| 07:15 AM    | 2                         | 0    | 1    | 0     | 2                      | 159  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 75   | 0    | 0     | 239        |
| 07:30 AM    | 1                         | 0    | 2    | 0     | 4                      | 158  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 73   | 0    | 0     | 238        |
| 07:45 AM    | 4                         | 0    | 2    | 0     | 6                      | 140  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 56   | 3    | 0     | 211        |
| Total       | 7                         | 0    | 5    | 0     | 13                     | 575  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 261  | 3    | 0     | 864        |
| Grand Total | 7                         | 0    | 5    | 0     | 13                     | 990  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 481  | 4    | 0     | 1500       |
| Apprch %    | 58.3                      | 0    | 41.7 | 0     | 1.3                    | 98.7 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 99.2 | 0.8  | 0     |            |
| Total %     | 0.5                       | 0    | 0.3  | 0     | 0.9                    | 66   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 32.1 | 0.3  | 0     |            |

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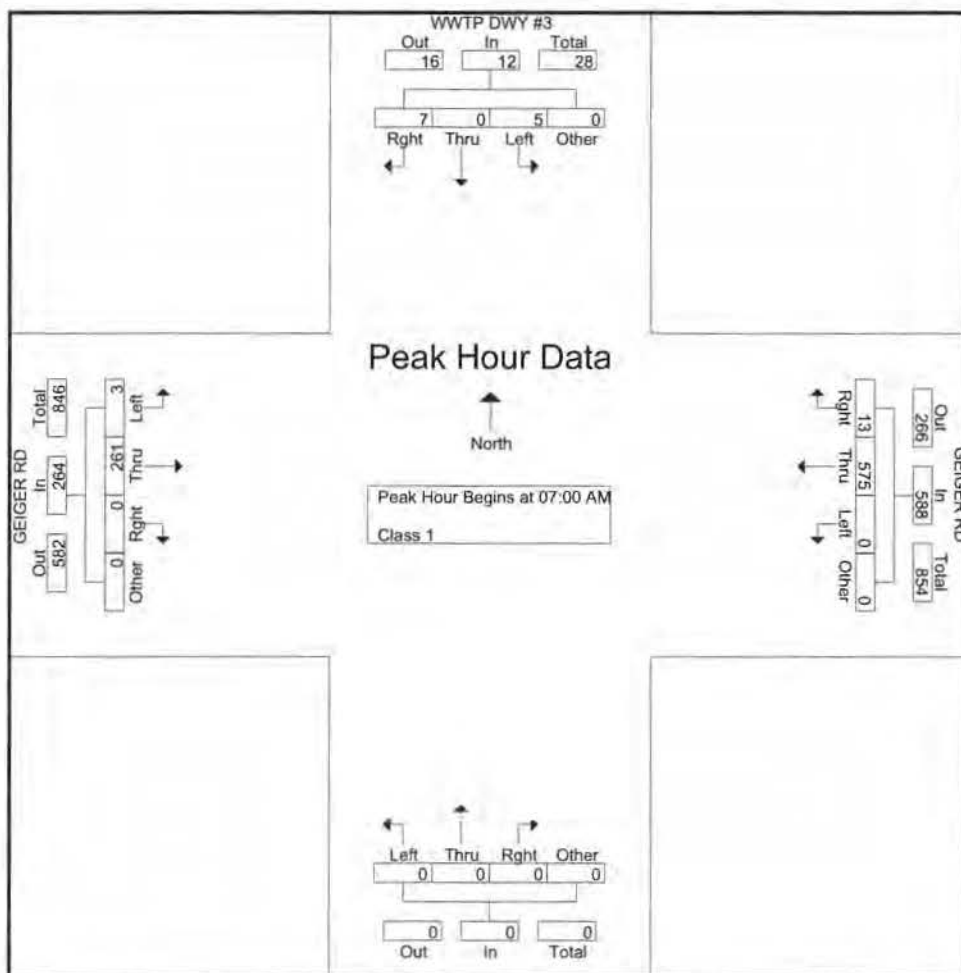
File Name : AM\_WWTP Dwy #3 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | WWTP DWY #3<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                     | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 06:45 AM to 07:45 AM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 07:00 AM                                                   | 0                         | 0    | 0    | 0     | 0          | 1                      | 118  | 0    | 0     | 119        | 0          | 0    | 0    | 0     | 0          | 0                      | 57   | 0    | 0     | 57         | 176        |
| 07:15 AM                                                   | 2                         | 0    | 1    | 0     | 3          | 2                      | 159  | 0    | 0     | 161        | 0          | 0    | 0    | 0     | 0          | 0                      | 75   | 0    | 0     | 75         | 239        |
| 07:30 AM                                                   | 1                         | 0    | 2    | 0     | 3          | 4                      | 158  | 0    | 0     | 162        | 0          | 0    | 0    | 0     | 0          | 0                      | 73   | 0    | 0     | 73         | 238        |
| 07:45 AM                                                   | 4                         | 0    | 2    | 0     | 6          | 6                      | 140  | 0    | 0     | 146        | 0          | 0    | 0    | 0     | 0          | 0                      | 56   | 3    | 0     | 59         | 211        |
| Total Volume                                               | 7                         | 0    | 5    | 0     | 12         | 13                     | 575  | 0    | 0     | 588        | 0          | 0    | 0    | 0     | 0          | 0                      | 261  | 3    | 0     | 264        | 864        |
| % App. Total                                               | 58.3                      | 0    | 41.7 | 0     |            | 2.2                    | 97.8 | 0    | 0     |            | 0          | 0    | 0    | 0     |            | 0                      | 98.9 | 1.1  | 0     |            |            |
| PHF                                                        | .438                      | .000 | .625 | .000  | .500       | .542                   | .904 | .000 | .000  | .907       | .000       | .000 | .000 | .000  | .000       | .000                   | .870 | .250 | .000  | .880       | .904       |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
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Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : PM\_Essex Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | From North |      |      |       | GEIGER RD<br>From East |      |      |       | ESSEX RD<br>From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|------------|------|------|-------|------------------------|------|------|-------|------------------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 03:30 PM    | 0          | 0    | 0    | 0     | 0                      | 98   | 2    | 0     | 0                      | 0    | 2    | 0     | 2                      | 133  | 0    | 0     | 237        |
| 03:45 PM    | 0          | 0    | 0    | 0     | 0                      | 72   | 2    | 0     | 4                      | 0    | 1    | 0     | 8                      | 140  | 0    | 0     | 227        |
| Total       | 0          | 0    | 0    | 0     | 0                      | 170  | 4    | 0     | 4                      | 0    | 3    | 0     | 10                     | 273  | 0    | 0     | 464        |
| 04:00 PM    | 0          | 0    | 0    | 0     | 0                      | 93   | 3    | 0     | 4                      | 0    | 2    | 0     | 2                      | 158  | 0    | 0     | 262        |
| 04:15 PM    | 0          | 0    | 0    | 0     | 0                      | 89   | 3    | 0     | 3                      | 0    | 2    | 0     | 4                      | 153  | 0    | 0     | 254        |
| 04:30 PM    | 0          | 0    | 0    | 0     | 0                      | 93   | 4    | 0     | 9                      | 0    | 2    | 0     | 4                      | 147  | 0    | 0     | 259        |
| 04:45 PM    | 0          | 0    | 0    | 0     | 0                      | 70   | 1    | 0     | 3                      | 0    | 3    | 0     | 3                      | 166  | 0    | 0     | 246        |
| Total       | 0          | 0    | 0    | 0     | 0                      | 345  | 11   | 0     | 19                     | 0    | 9    | 0     | 13                     | 624  | 0    | 0     | 1021       |
| 05:00 PM    | 0          | 0    | 0    | 0     | 0                      | 71   | 4    | 0     | 5                      | 0    | 4    | 0     | 4                      | 162  | 0    | 0     | 250        |
| 05:15 PM    | 0          | 0    | 0    | 0     | 0                      | 67   | 6    | 0     | 7                      | 0    | 3    | 0     | 5                      | 136  | 0    | 0     | 224        |
| Grand Total | 0          | 0    | 0    | 0     | 0                      | 653  | 25   | 0     | 35                     | 0    | 19   | 0     | 32                     | 1195 | 0    | 0     | 1959       |
| Apprch %    | 0          | 0    | 0    | 0     | 0                      | 96.3 | 3.7  | 0     | 64.8                   | 0    | 35.2 | 0     | 2.6                    | 97.4 | 0    | 0     |            |
| Total %     | 0          | 0    | 0    | 0     | 0                      | 33.3 | 1.3  | 0     | 1.8                    | 0    | 1    | 0     | 1.6                    | 61   | 0    | 0     |            |

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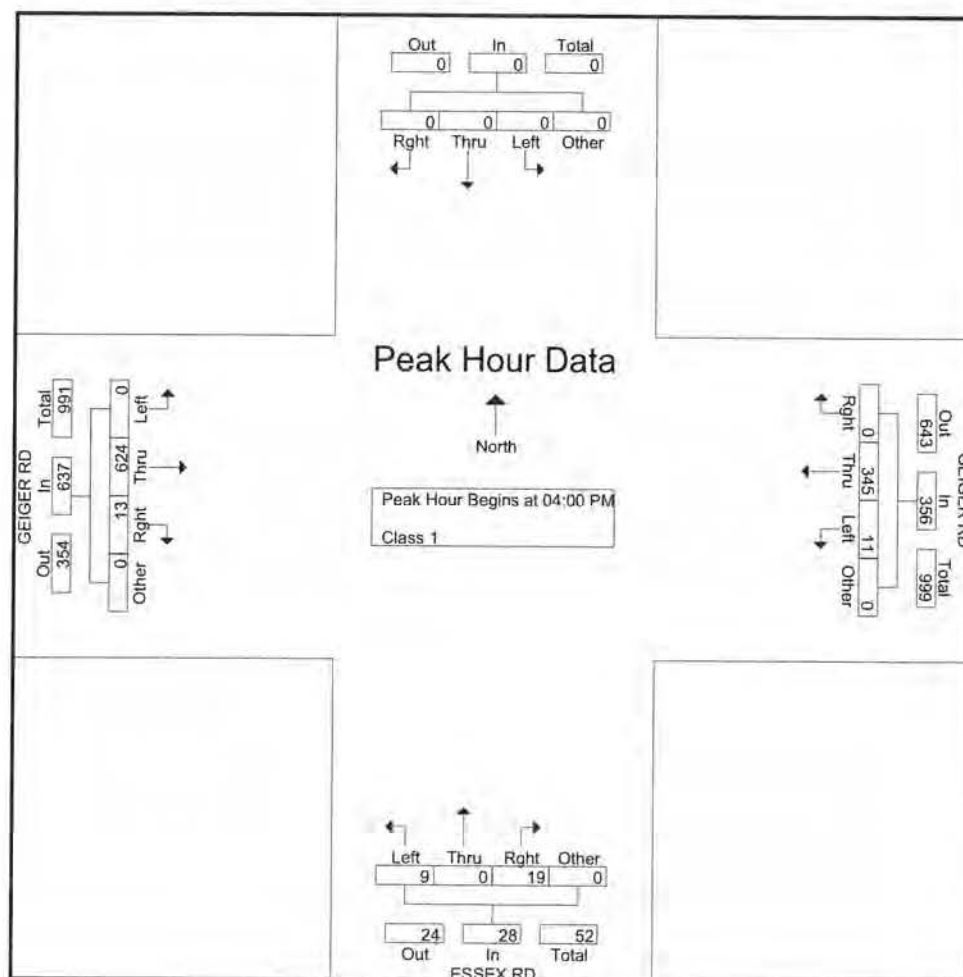
File Name : PM\_Essex Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | ESSEX RD<br>From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |            |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |            |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |                        |      |      |       |            |            |
| 04:00 PM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 93   | 3    | 0     | 96         | 4                      | 0    | 2    | 0     | 6          | 2                      | 158  | 0    | 0     | 160        | 262        |
| 04:15 PM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 89   | 3    | 0     | 92         | 3                      | 0    | 2    | 0     | 5          | 4                      | 153  | 0    | 0     | 157        | 254        |
| 04:30 PM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 93   | 4    | 0     | 97         | 9                      | 0    | 2    | 0     | 11         | 4                      | 147  | 0    | 0     | 151        | 259        |
| 04:45 PM                                                   | 0          | 0    | 0    | 0     | 0          | 0                      | 70   | 1    | 0     | 71         | 3                      | 0    | 3    | 0     | 6          | 3                      | 166  | 0    | 0     | 169        | 246        |
| Total Volume                                               | 0          | 0    | 0    | 0     | 0          | 0                      | 345  | 11   | 0     | 356        | 19                     | 0    | 9    | 0     | 28         | 13                     | 624  | 0    | 0     | 637        | 1021       |
| % App. Total                                               | 0          | 0    | 0    | 0     | 0          | 0                      | 96.9 | 3.1  | 0     |            | 67.9                   | 0    | 32.1 | 0     |            | 2                      | 98   | 0    | 0     |            |            |
| PHF                                                        | .000       | .000 | .000 | .000  | .000       | .000                   | .927 | .688 | .000  | .918       | .528                   | .000 | .750 | .000  | .636       | .813                   | .940 | .000 | .000  | .942       | .974       |



# Austin Tsutsumi & Associates

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Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : PM\_Ft Weaver Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | FT WEAVER RD<br>From North |      |      |         |      | GEIGER RD<br>From East |      |      |      | FT WEAVER RD<br>From South |      |      |      | GEIGER RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|---------|------|------------------------|------|------|------|----------------------------|------|------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | Peds | Right                  | Thru | Left | Peds |            |
| 03:30 PM    | 68                         | 399  | 89   | 1       | 0    | 33                     | 34   | 2    | 0    | 1                          | 266  | 48   | 5    | 34                     | 30   | 40   | 7    | 1057       |
| 03:45 PM    | 53                         | 314  | 84   | 0       | 0    | 27                     | 33   | 6    | 0    | 3                          | 266  | 30   | 20   | 35                     | 59   | 52   | 11   | 993        |
| Total       | 121                        | 713  | 173  | 1       | 0    | 60                     | 67   | 8    | 0    | 4                          | 532  | 78   | 25   | 69                     | 89   | 92   | 18   | 2050       |
| 04:00 PM    | 37                         | 332  | 77   | 0       | 0    | 37                     | 53   | 0    | 0    | 4                          | 197  | 30   | 14   | 23                     | 54   | 59   | 6    | 923        |
| 04:15 PM    | 43                         | 345  | 59   | 0       | 0    | 28                     | 38   | 1    | 0    | 1                          | 222  | 34   | 15   | 44                     | 44   | 50   | 15   | 939        |
| 04:30 PM    | 59                         | 399  | 107  | 0       | 0    | 28                     | 44   | 5    | 0    | 2                          | 200  | 37   | 7    | 47                     | 37   | 47   | 4    | 1023       |
| 04:45 PM    | 68                         | 417  | 98   | 0       | 0    | 29                     | 47   | 4    | 0    | 3                          | 198  | 34   | 11   | 39                     | 71   | 42   | 7    | 1068       |
| Total       | 207                        | 1493 | 341  | 0       | 0    | 122                    | 182  | 10   | 0    | 10                         | 817  | 135  | 47   | 153                    | 206  | 198  | 32   | 3953       |
| 05:00 PM    | 53                         | 356  | 109  | 0       | 0    | 28                     | 41   | 6    | 0    | 1                          | 181  | 39   | 14   | 48                     | 83   | 53   | 2    | 1014       |
| 05:15 PM    | 79                         | 376  | 83   | 0       | 0    | 27                     | 31   | 6    | 0    | 2                          | 222  | 25   | 12   | 32                     | 43   | 46   | 11   | 995        |
| Grand Total | 460                        | 2938 | 706  | 1       | 0    | 237                    | 321  | 30   | 0    | 17                         | 1752 | 277  | 98   | 302                    | 421  | 389  | 63   | 8012       |
| Apprch %    | 11.2                       | 71.6 | 17.2 | 0       | 0    | 40.3                   | 54.6 | 5.1  | 0    | 0.8                        | 81.7 | 12.9 | 4.6  | 25.7                   | 35.8 | 33.1 | 5.4  |            |
| Total %     | 5.7                        | 36.7 | 8.8  | 0       | 0    | 3                      | 4    | 0.4  | 0    | 0.2                        | 21.9 | 3.5  | 1.2  | 3.8                    | 5.3  | 4.9  | 0.8  |            |

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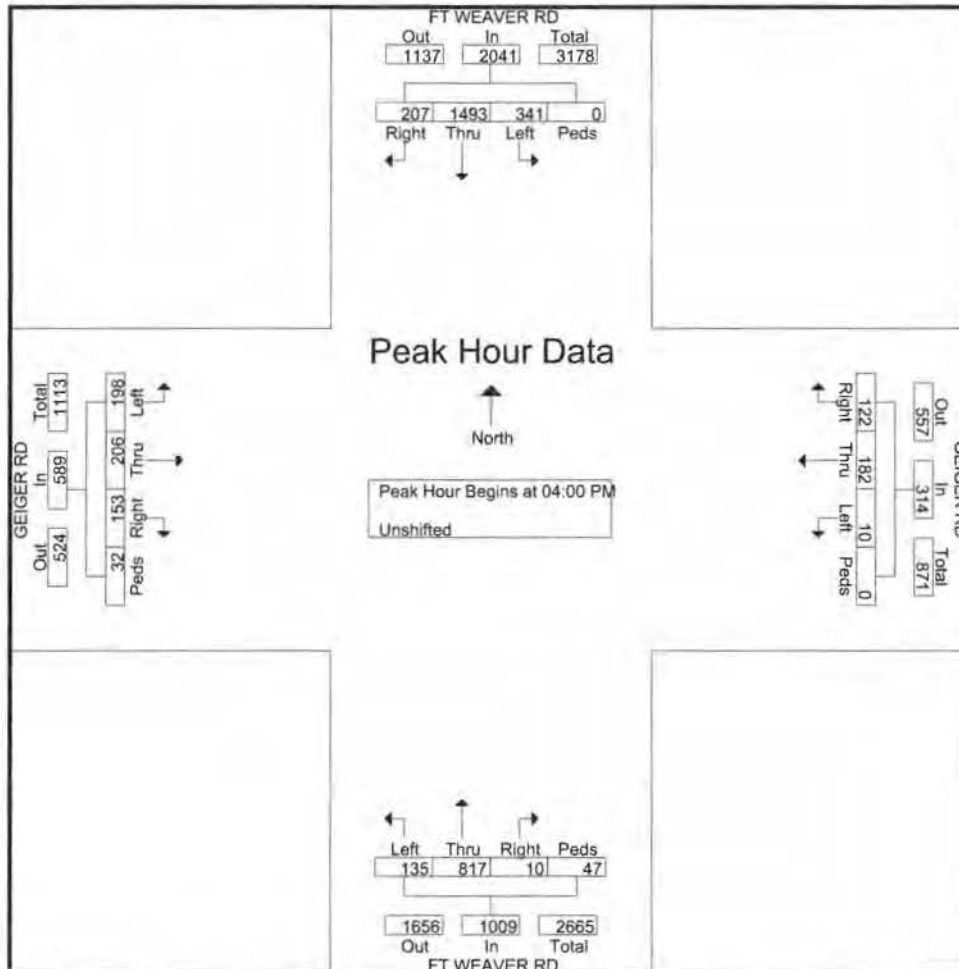
File Name : PM\_Ft Weaver Rd - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | FT WEAVER RD<br>From North |      |      |        |      |            | GEIGER RD<br>From East |      |      |      |            | FT WEAVER RD<br>From South |      |      |      |            | GEIGER RD<br>From West |      |      |      |            |            |
|------------------------------------------------------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|------|------------|------------------------|------|------|------|------------|------------|
| Start<br>Time                                              | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| 04:00 PM                                                   | 37                         | 332  | 77   | 0      | 0    | 446        | 37                     | 53   | 0    | 0    | 90         | 4                          | 197  | 30   | 14   | 245        | 23                     | 54   | 59   | 6    | 142        | 923        |
| 04:15 PM                                                   | 43                         | 345  | 59   | 0      | 0    | 447        | 28                     | 38   | 1    | 0    | 67         | 1                          | 222  | 34   | 15   | 272        | 44                     | 44   | 50   | 15   | 153        | 939        |
| 04:30 PM                                                   | 59                         | 399  | 107  | 0      | 0    | 565        | 28                     | 44   | 5    | 0    | 77         | 2                          | 200  | 37   | 7    | 246        | 47                     | 37   | 47   | 4    | 135        | 1023       |
| 04:45 PM                                                   | 68                         | 417  | 98   | 0      | 0    | 583        | 29                     | 47   | 4    | 0    | 80         | 3                          | 198  | 34   | 11   | 246        | 39                     | 71   | 42   | 7    | 159        | 1068       |
| Total Volume                                               | 207                        | 1493 | 341  | 0      | 0    | 2041       | 122                    | 182  | 10   | 0    | 314        | 10                         | 817  | 135  | 47   | 1009       | 153                    | 206  | 198  | 32   | 589        | 3953       |
| % App. Total                                               | 10.1                       | 73.2 | 16.7 |        |      |            | 38.9                   |      |      |      |            |                            |      | 13.4 |      |            |                        |      | 33.6 |      |            |            |
| PHF                                                        | .761                       | .895 | .797 | .000   | .000 | .875       | .824                   | .858 | .500 | .000 | .872       | .625                       | .920 | .912 | .783 | .927       | .814                   | .725 | .839 | .533 | .926       | .925       |



# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : PM\_Ft Weaver Rd - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | FT WEAVER RD<br>From North |      |      |         |      | RENTON RD<br>From East |      |      |      | FT WEAVER RD<br>From South |      |      |         |      | RENTON RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|---------|------|------------------------|------|------|------|----------------------------|------|------|---------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds |            |
| 03:30 PM    | 56                         | 704  | 0    | 4       | 0    | 3                      | 1    | 2    | 5    | 5                          | 453  | 23   | 0       | 2    | 27                     | 0    | 78   | 2    | 1365       |
| 03:45 PM    | 88                         | 604  | 8    | 7       | 0    | 3                      | 1    | 2    | 1    | 13                         | 404  | 36   | 1       | 6    | 32                     | 4    | 111  | 0    | 1321       |
| Total       | 144                        | 1308 | 8    | 11      | 0    | 6                      | 2    | 4    | 6    | 18                         | 857  | 59   | 1       | 8    | 59                     | 4    | 189  | 2    | 2686       |
| 04:00 PM    | 83                         | 565  | 11   | 9       | 0    | 4                      | 7    | 9    | 19   | 21                         | 398  | 33   | 1       | 14   | 23                     | 12   | 99   | 1    | 1309       |
| 04:15 PM    | 71                         | 582  | 10   | 4       | 0    | 8                      | 10   | 13   | 5    | 18                         | 330  | 31   | 1       | 6    | 24                     | 11   | 100  | 0    | 1224       |
| 04:30 PM    | 68                         | 733  | 8    | 11      | 0    | 8                      | 8    | 8    | 4    | 10                         | 380  | 25   | 0       | 7    | 24                     | 7    | 75   | 3    | 1379       |
| 04:45 PM    | 76                         | 748  | 8    | 7       | 0    | 2                      | 3    | 4    | 3    | 5                          | 302  | 24   | 0       | 5    | 26                     | 6    | 81   | 1    | 1301       |
| Total       | 298                        | 2628 | 37   | 31      | 0    | 22                     | 28   | 34   | 31   | 54                         | 1410 | 113  | 2       | 32   | 97                     | 36   | 355  | 5    | 5213       |
| 05:00 PM    | 57                         | 660  | 4    | 8       | 0    | 8                      | 3    | 2    | 13   | 14                         | 359  | 32   | 0       | 1    | 27                     | 5    | 65   | 0    | 1258       |
| 05:15 PM    | 70                         | 674  | 10   | 6       | 0    | 3                      | 3    | 2    | 12   | 9                          | 320  | 18   | 2       | 9    | 18                     | 5    | 79   | 5    | 1245       |
| Grand Total | 569                        | 5270 | 59   | 56      | 0    | 39                     | 36   | 42   | 62   | 95                         | 2946 | 222  | 5       | 50   | 201                    | 50   | 688  | 12   | 10402      |
| Apprch %    | 9.6                        | 88.5 | 1    | 0.9     | 0    | 21.8                   | 20.1 | 23.5 | 34.6 | 2.9                        | 88.8 | 6.7  | 0.2     | 1.5  | 21.1                   | 5.3  | 72.3 | 1.3  |            |
| Total %     | 5.5                        | 50.7 | 0.6  | 0.5     | 0    | 0.4                    | 0.3  | 0.4  | 0.6  | 0.9                        | 28.3 | 2.1  | 0       | 0.5  | 1.9                    | 0.5  | 6.6  | 0.1  |            |

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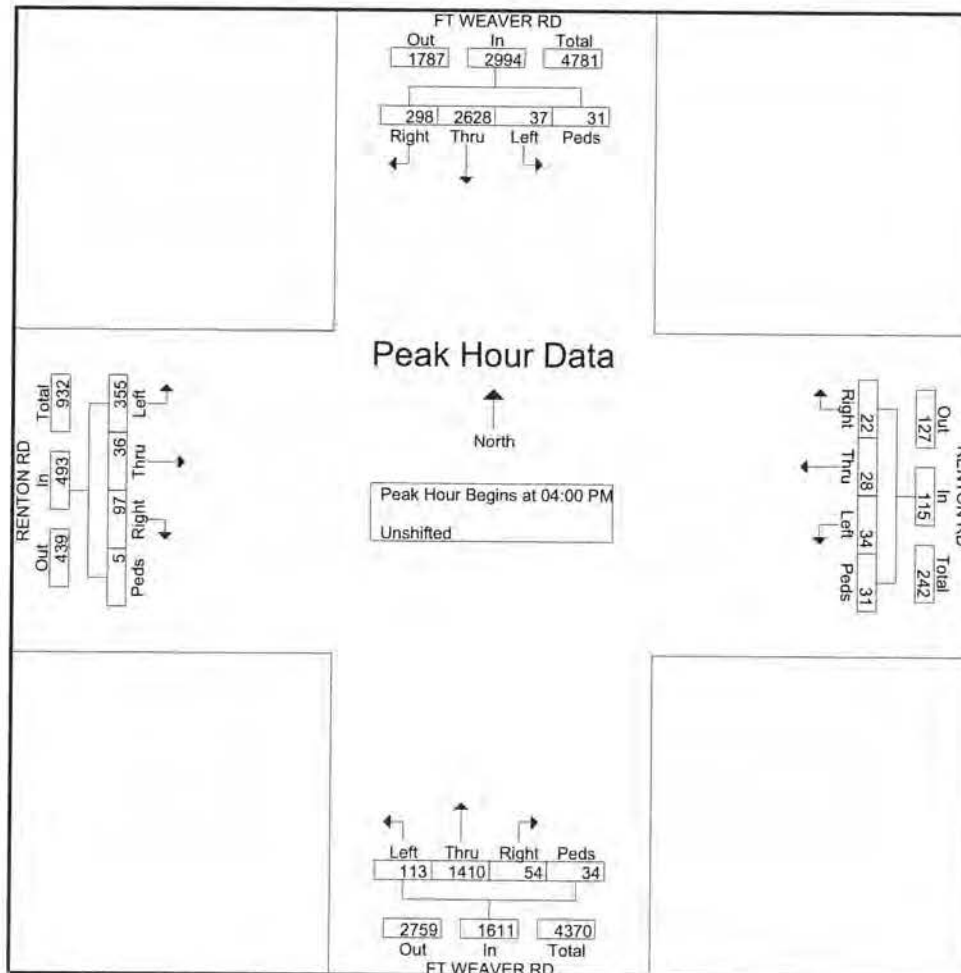
File Name : PM\_Ft Weaver Rd - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | FT WEAVER RD<br>From North |      |      |        |      |            | RENTON RD<br>From East |      |      |      |            | FT WEAVER RD<br>From South |      |      |        |      |            | RENTON RD<br>From West |      |      |      |            |            |  |
|------------------------------------------------------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|------------|--|
| Start Time                                                 | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |  |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |  |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |        |      |            |                        |      |      |      |            |            |  |
| 04:00 PM                                                   | 83                         | 565  | 11   | 9      | 0    | 668        | 4                      | 7    | 9    | 19   | 39         | 21                         | 398  | 33   | 1      | 14   | 467        | 23                     | 12   | 99   | 1    | 135        | 1309       |  |
| 04:15 PM                                                   | 71                         | 582  | 10   | 4      | 0    | 667        | 8                      | 10   | 13   | 5    | 36         | 18                         | 330  | 31   | 1      | 6    | 386        | 24                     | 11   | 100  | 0    | 135        | 1224       |  |
| 04:30 PM                                                   | 68                         | 733  | 8    | 11     | 0    | 820        | 8                      | 8    | 8    | 4    | 28         | 10                         | 380  | 25   | 0      | 7    | 422        | 24                     | 7    | 75   | 3    | 109        | 1379       |  |
| 04:45 PM                                                   | 76                         | 748  | 8    | 7      | 0    | 839        | 2                      | 3    | 4    | 3    | 12         | 5                          | 302  | 24   | 0      | 5    | 336        | 26                     | 6    | 81   | 1    | 114        | 1301       |  |
| Total Volume                                               | 298                        | 2628 | 37   | 31     | 0    | 2994       | 22                     | 28   | 34   | 31   | 115        | 54                         | 1410 | 113  | 2      | 32   | 1611       | 97                     | 36   | 355  | 5    | 493        | 5213       |  |
| % App. Total                                               | 10                         | 87.8 | 1.2  | 1      | 0    |            | 19.1                   | 24.3 | 29.6 | 27   |            | 3.4                        | 87.5 | 7    | 0.1    | 2    |            | 19.7                   | 7.3  | 72   | 1    |            |            |  |
| PHF                                                        | .898                       | .878 | .841 | .705   | .000 | .892       | .688                   | .700 | .654 | .408 | .737       | .643                       | .886 | .856 | .500   | .571 | .862       | .933                   | .750 | .888 | .417 | .913       | .945       |  |



# Austin Tsutsumi & Associates

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File Name : PM\_Kapolei Pkwy - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | KAPOLEI PKWY<br>From North |      |      |         |      | GEIGER RD<br>From East |      |      |      | KAPOLEI PKWY<br>From South |      |      |      | GEIGER RD<br>From West |      |      |      | Int. Total |
|-------------|----------------------------|------|------|---------|------|------------------------|------|------|------|----------------------------|------|------|------|------------------------|------|------|------|------------|
|             | Right                      | Thru | Left | U-Turns | Peds | Right                  | Thru | Left | Peds | Right                      | Thru | Left | Peds | Right                  | Thru | Left | Peds |            |
| 03:30 PM    | 5                          | 125  | 29   | 1       | 2    | 67                     | 37   | 46   | 3    | 28                         | 127  | 56   | 1    | 77                     | 52   | 9    | 2    | 667        |
| 03:45 PM    | 8                          | 108  | 24   | 0       | 1    | 60                     | 24   | 26   | 7    | 13                         | 111  | 42   | 0    | 97                     | 64   | 10   | 4    | 599        |
| Total       | 13                         | 233  | 53   | 1       | 3    | 127                    | 61   | 72   | 10   | 41                         | 238  | 98   | 1    | 174                    | 116  | 19   | 6    | 1266       |
| 04:00 PM    | 5                          | 115  | 36   | 0       | 4    | 57                     | 43   | 24   | 5    | 22                         | 90   | 51   | 0    | 101                    | 55   | 10   | 3    | 621        |
| 04:15 PM    | 9                          | 122  | 38   | 0       | 0    | 59                     | 26   | 24   | 4    | 26                         | 121  | 57   | 1    | 91                     | 45   | 11   | 5    | 639        |
| 04:30 PM    | 5                          | 133  | 33   | 1       | 0    | 56                     | 40   | 29   | 5    | 20                         | 82   | 50   | 0    | 101                    | 73   | 14   | 1    | 643        |
| 04:45 PM    | 6                          | 122  | 45   | 0       | 2    | 60                     | 33   | 44   | 4    | 24                         | 76   | 38   | 0    | 102                    | 55   | 10   | 2    | 623        |
| Total       | 25                         | 492  | 152  | 1       | 6    | 232                    | 142  | 121  | 18   | 92                         | 369  | 196  | 1    | 395                    | 228  | 45   | 11   | 2526       |
| 05:00 PM    | 10                         | 137  | 49   | 0       | 1    | 51                     | 25   | 47   | 3    | 14                         | 83   | 39   | 3    | 111                    | 73   | 10   | 0    | 656        |
| 05:15 PM    | 3                          | 137  | 35   | 0       | 0    | 57                     | 26   | 36   | 5    | 22                         | 90   | 45   | 4    | 81                     | 50   | 10   | 3    | 604        |
| Grand Total | 51                         | 999  | 289  | 2       | 10   | 467                    | 254  | 276  | 36   | 169                        | 780  | 378  | 9    | 761                    | 467  | 84   | 20   | 5052       |
| Apprch %    | 3.8                        | 73.9 | 21.4 | 0.1     | 0.7  | 45.2                   | 24.6 | 26.7 | 3.5  | 12.6                       | 58.4 | 28.3 | 0.7  | 57.1                   | 35.1 | 6.3  | 1.5  |            |
| Total %     | 1                          | 19.8 | 5.7  | 0       | 0.2  | 9.2                    | 5    | 5.5  | 0.7  | 3.3                        | 15.4 | 7.5  | 0.2  | 15.1                   | 9.2  | 1.7  | 0.4  |            |

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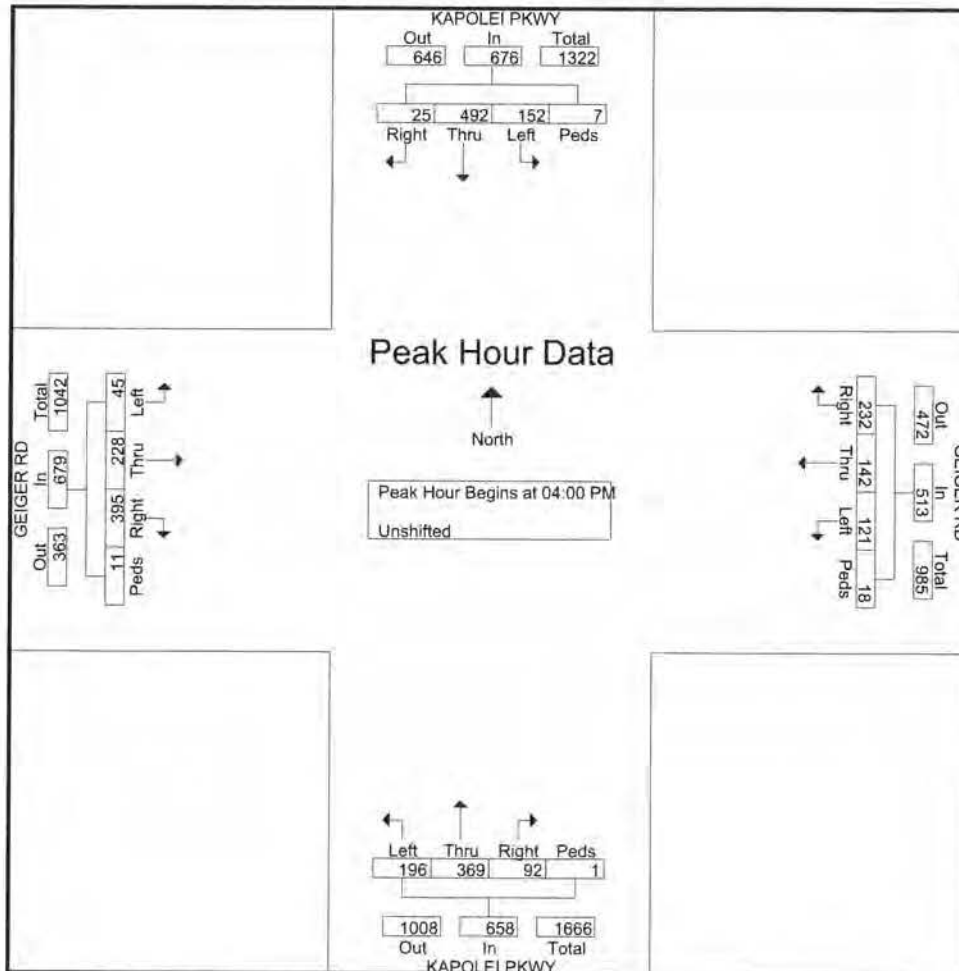
File Name : PM\_Kapolei Pkwy - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | KAPOLEI PKWY<br>From North |      |      |        |      |            | GEIGER RD<br>From East |      |      |      |            | KAPOLEI PKWY<br>From South |      |      |      |            | GEIGER RD<br>From West |      |      |      |            |            |
|------------------------------------------------------------|----------------------------|------|------|--------|------|------------|------------------------|------|------|------|------------|----------------------------|------|------|------|------------|------------------------|------|------|------|------------|------------|
| Start<br>Time                                              | Right                      | Thru | Left | U-Turn | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Right                      | Thru | Left | Peds | App. Total | Right                  | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                            |      |      |        |      |            |                        |      |      |      |            |                            |      |      |      |            |                        |      |      |      |            |            |
| 04:00 PM                                                   | 5                          | 115  | 36   | 0      | 4    | 160        | 57                     | 43   | 24   | 5    | 129        | 22                         | 90   | 51   | 0    | 163        | 101                    | 55   | 10   | 3    | 169        | 621        |
| 04:15 PM                                                   | 9                          | 122  | 38   | 0      | 0    | 169        | 59                     | 26   | 24   | 4    | 113        | 26                         | 121  | 57   | 1    | 205        | 91                     | 45   | 11   | 5    | 152        | 639        |
| 04:30 PM                                                   | 5                          | 133  | 33   | 1      | 0    | 172        | 56                     | 40   | 29   | 5    | 130        | 20                         | 82   | 50   | 0    | 152        | 101                    | 73   | 14   | 1    | 189        | 643        |
| 04:45 PM                                                   | 6                          | 122  | 45   | 0      | 2    | 175        | 60                     | 33   | 44   | 4    | 141        | 24                         | 76   | 38   | 0    | 138        | 102                    | 55   | 10   | 2    | 169        | 623        |
| Total Volume                                               | 25                         | 492  | 152  | 1      | 6    | 676        | 232                    | 142  | 121  | 18   | 513        | 92                         | 369  | 196  | 1    | 658        | 395                    | 228  | 45   | 11   | 679        | 2526       |
| % App. Total                                               | 3.7                        | 72.8 | 22.5 | 0.1    | 0.9  |            | 45.2                   | 27.7 | 23.6 | 3.5  |            | 14                         | 56.1 | 29.8 | 0.2  |            | 58.2                   | 33.6 | 6.6  | 1.6  |            |            |
| PHF                                                        | .694                       | .925 | .844 | .250   | .375 | .966       | .967                   | .826 | .688 | .900 | .910       | .885                       | .762 | .860 | .250 | .802       | .968                   | .781 | .804 | .550 | .898       | .982       |



# Austin Tsutsumi & Associates

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File Name : PM\_Kualakai Pkwy - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

| Start Time  | KUALAKAI PKWY<br>From North |      |      |      | KAPOLEI PKWY<br>From East |      |      |      | KUALAKAI PKWY<br>From South |      |      |      | KAPOLEI PKWY<br>From West |      |      |      | Int. Total |
|-------------|-----------------------------|------|------|------|---------------------------|------|------|------|-----------------------------|------|------|------|---------------------------|------|------|------|------------|
|             | Right                       | Thru | Left | Peds | Right                     | Thru | Left | Peds | Right                       | Thru | Left | Peds | Right                     | Thru | Left | Peds |            |
| 03:30 PM    | 69                          | 0    | 83   | 0    | 51                        | 91   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 114  | 59   | 0    | 467        |
| 03:45 PM    | 91                          | 0    | 67   | 0    | 70                        | 104  | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 101  | 63   | 0    | 496        |
| Total       | 160                         | 0    | 150  | 0    | 121                       | 195  | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 215  | 122  | 0    | 963        |
| 04:00 PM    | 92                          | 0    | 83   | 0    | 70                        | 93   | 0    | 1    | 0                           | 0    | 0    | 0    | 0                         | 102  | 55   | 4    | 500        |
| 04:15 PM    | 67                          | 0    | 108  | 1    | 58                        | 84   | 0    | 1    | 0                           | 0    | 0    | 0    | 0                         | 86   | 38   | 0    | 443        |
| 04:30 PM    | 90                          | 0    | 92   | 0    | 64                        | 89   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 114  | 68   | 0    | 517        |
| 04:45 PM    | 85                          | 0    | 94   | 0    | 61                        | 90   | 0    | 2    | 0                           | 0    | 0    | 0    | 0                         | 140  | 57   | 0    | 529        |
| Total       | 334                         | 0    | 377  | 1    | 253                       | 356  | 0    | 4    | 0                           | 0    | 0    | 0    | 0                         | 442  | 218  | 4    | 1989       |
| 05:00 PM    | 81                          | 0    | 106  | 3    | 49                        | 83   | 0    | 2    | 0                           | 0    | 0    | 0    | 0                         | 128  | 54   | 0    | 506        |
| 05:15 PM    | 83                          | 0    | 105  | 1    | 56                        | 64   | 0    | 0    | 0                           | 0    | 0    | 0    | 0                         | 77   | 41   | 0    | 427        |
| Grand Total | 658                         | 0    | 738  | 5    | 479                       | 698  | 0    | 6    | 0                           | 0    | 0    | 0    | 0                         | 862  | 435  | 4    | 3885       |
| Apprch %    | 47                          | 0    | 52.7 | 0.4  | 40.5                      | 59   | 0    | 0.5  | 0                           | 0    | 0    | 0    | 0                         | 66.3 | 33.4 | 0.3  |            |
| Total %     | 16.9                        | 0    | 19   | 0.1  | 12.3                      | 18   | 0    | 0.2  | 0                           | 0    | 0    | 0    | 0                         | 22.2 | 11.2 | 0.1  |            |

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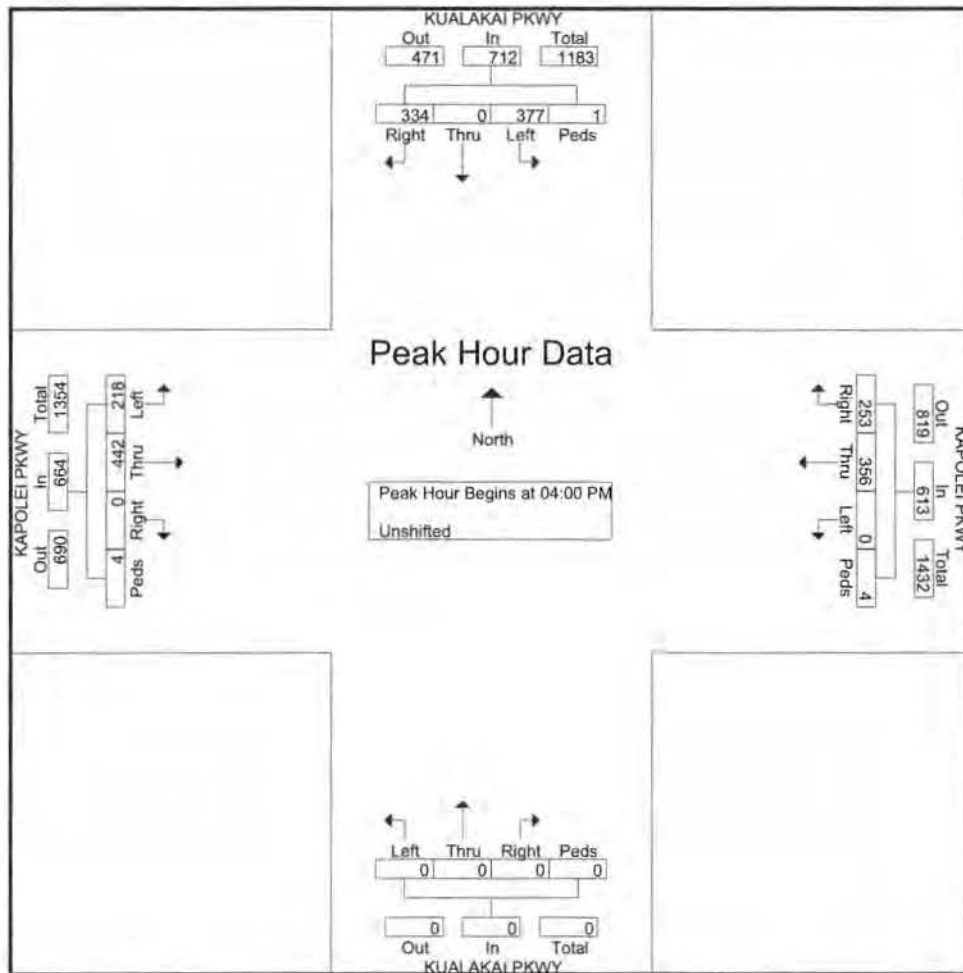
File Name : PM\_Kualakai Pkwy - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | KUALAKAI PKWY<br>From North |      |      |      |            | KAPOLEI PKWY<br>From East |      |      |      |            | KUALAKAI PKWY<br>From South |      |      |      |            | KAPOLEI PKWY<br>From West |      |      |      |            |            |
|------------------------------------------------------------|-----------------------------|------|------|------|------------|---------------------------|------|------|------|------------|-----------------------------|------|------|------|------------|---------------------------|------|------|------|------------|------------|
| Start Time                                                 | Right                       | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Right                       | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                             |      |      |      |            |                           |      |      |      |            |                             |      |      |      |            |                           |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                             |      |      |      |            |                           |      |      |      |            |                             |      |      |      |            |                           |      |      |      |            |            |
| 04:00 PM                                                   | 92                          | 0    | 83   | 0    | 175        | 70                        | 93   | 0    | 1    | 164        | 0                           | 0    | 0    | 0    | 0          | 0                         | 102  | 55   | 4    | 161        | 500        |
| 04:15 PM                                                   | 67                          | 0    | 108  | 1    | 176        | 58                        | 84   | 0    | 1    | 143        | 0                           | 0    | 0    | 0    | 0          | 0                         | 86   | 38   | 0    | 124        | 443        |
| 04:30 PM                                                   | 90                          | 0    | 92   | 0    | 182        | 64                        | 89   | 0    | 0    | 153        | 0                           | 0    | 0    | 0    | 0          | 0                         | 114  | 68   | 0    | 182        | 517        |
| 04:45 PM                                                   | 85                          | 0    | 94   | 0    | 179        | 61                        | 90   | 0    | 2    | 153        | 0                           | 0    | 0    | 0    | 0          | 0                         | 140  | 57   | 0    | 197        | 529        |
| Total Volume                                               | 334                         | 0    | 377  | 1    | 712        | 253                       | 356  | 0    | 4    | 613        | 0                           | 0    | 0    | 0    | 0          | 0                         | 442  | 218  | 4    | 664        | 1989       |
| % App. Total                                               | 46.9                        | 0    | 52.9 | 0.1  |            | 41.3                      | 58.1 | 0    | 0.7  |            | 0                           | 0    | 0    | 0    | 0          | 0                         | 66.6 | 32.8 | 0.6  |            |            |
| PHF                                                        | .908                        | .000 | .873 | .250 | .978       | .904                      | .957 | .000 | .500 | .934       | .000                        | .000 | .000 | .000 | .000       | .000                      | .789 | .801 | .250 | .843       | .940       |



# Austin Tsutsumi & Associates

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File Name : PM\_Phillipine Sea - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | PHILLIPINE SEA<br>From North |      |      |       | RENTON RD<br>From East |      |      |       | PHILLIPINE SEA<br>From South |      |      |       | RENTON RD<br>From West |      |      |       | Int. Total |
|-------------|------------------------------|------|------|-------|------------------------|------|------|-------|------------------------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                         | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght                         | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 03:30 PM    | 0                            | 0    | 0    | 0     | 0                      | 2    | 31   | 0     | 35                           | 0    | 1    | 0     | 1                      | 2    | 0    | 0     | 72         |
| 03:45 PM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 30   | 0     | 50                           | 0    | 1    | 0     | 0                      | 1    | 0    | 0     | 82         |
| Total       | 0                            | 0    | 0    | 0     | 0                      | 2    | 61   | 0     | 85                           | 0    | 2    | 0     | 1                      | 3    | 0    | 0     | 154        |
| 04:00 PM    | 0                            | 0    | 0    | 0     | 0                      | 2    | 29   | 0     | 53                           | 0    | 1    | 0     | 0                      | 1    | 0    | 0     | 86         |
| 04:15 PM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 40   | 0     | 44                           | 0    | 0    | 0     | 0                      | 0    | 0    | 0     | 84         |
| 04:30 PM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 42   | 0     | 47                           | 0    | 3    | 0     | 3                      | 1    | 0    | 0     | 96         |
| 04:45 PM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 24   | 0     | 49                           | 0    | 2    | 0     | 0                      | 0    | 0    | 0     | 75         |
| Total       | 0                            | 0    | 0    | 0     | 0                      | 2    | 135  | 0     | 193                          | 0    | 6    | 0     | 3                      | 2    | 0    | 0     | 341        |
| 05:00 PM    | 0                            | 0    | 0    | 0     | 0                      | 0    | 24   | 0     | 47                           | 0    | 0    | 0     | 0                      | 2    | 0    | 0     | 73         |
| 05:15 PM    | 0                            | 0    | 0    | 0     | 0                      | 1    | 34   | 0     | 48                           | 0    | 0    | 0     | 2                      | 0    | 0    | 0     | 85         |
| Grand Total | 0                            | 0    | 0    | 0     | 0                      | 5    | 254  | 0     | 373                          | 0    | 8    | 0     | 6                      | 7    | 0    | 0     | 653        |
| Apprch %    | 0                            | 0    | 0    | 0     | 0                      | 1.9  | 98.1 | 0     | 97.9                         | 0    | 2.1  | 0     | 46.2                   | 53.8 | 0    | 0     |            |
| Total %     | 0                            | 0    | 0    | 0     | 0                      | 0.8  | 38.9 | 0     | 57.1                         | 0    | 1.2  | 0     | 0.9                    | 1.1  | 0    | 0     |            |

# Austin Tsutsumi & Associates

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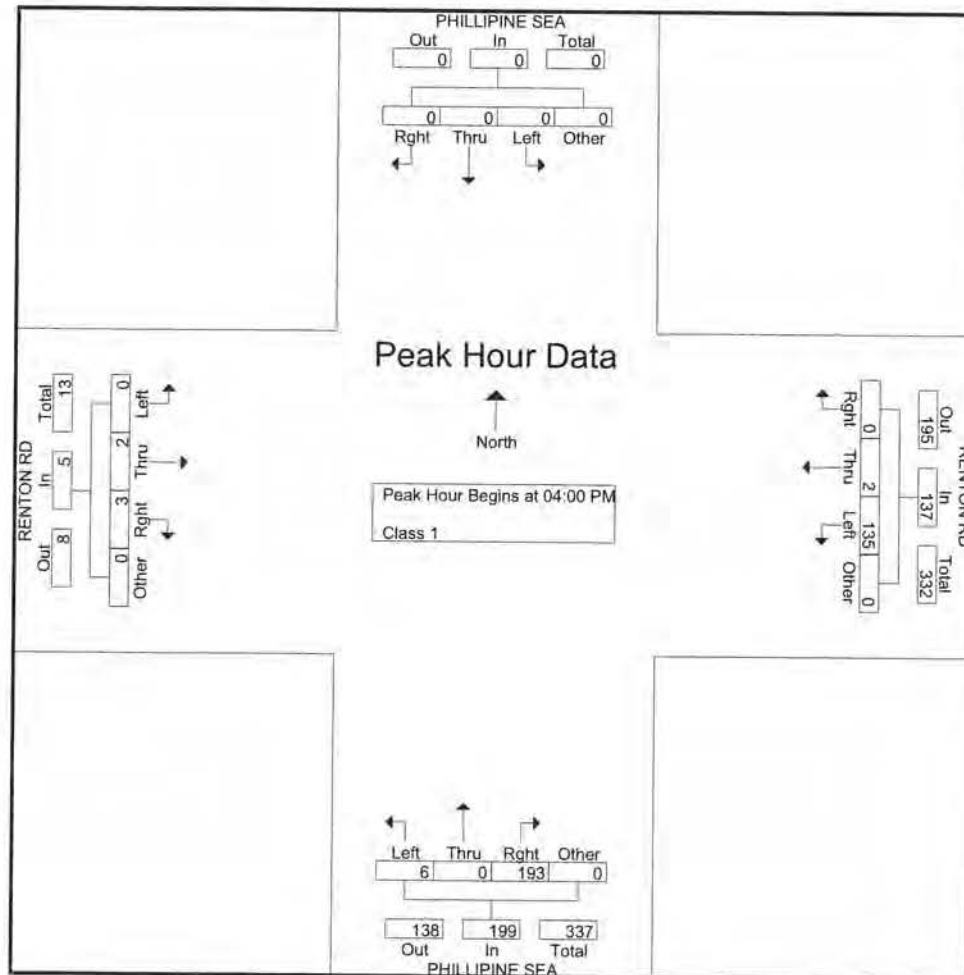
File Name : PM\_Phillipine Sea - Renton Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | PHILLIPINE SEA<br>From North |      |      |       |            | RENTON RD<br>From East |      |      |       |            | PHILLIPINE SEA<br>From South |      |      |       |            | RENTON RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|------------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                        | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right                        | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                              |      |      |       |            |                        |      |      |       |            |                              |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                              |      |      |       |            |                        |      |      |       |            |                              |      |      |       |            |                        |      |      |       |            |            |
| 04:00 PM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 2    | 29   | 0     | 31         | 53                           | 0    | 1    | 0     | 54         | 0                      | 1    | 0    | 0     | 1          | 86         |
| 04:15 PM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 40   | 0     | 40         | 44                           | 0    | 0    | 0     | 44         | 0                      | 0    | 0    | 0     | 0          | 84         |
| 04:30 PM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 42   | 0     | 42         | 47                           | 0    | 3    | 0     | 50         | 3                      | 1    | 0    | 0     | 4          | 96         |
| 04:45 PM                                                   | 0                            | 0    | 0    | 0     | 0          | 0                      | 0    | 24   | 0     | 24         | 49                           | 0    | 2    | 0     | 51         | 0                      | 0    | 0    | 0     | 0          | 75         |
| Total Volume                                               | 0                            | 0    | 0    | 0     | 0          | 0                      | 2    | 135  | 0     | 137        | 193                          | 0    | 6    | 0     | 199        | 3                      | 2    | 0    | 0     | 5          | 341        |
| % App. Total                                               | 0                            | 0    | 0    | 0     | 0          | 0                      | 1.5  | 98.5 | 0     | 97         | 97                           | 0    | 3    | 0     | 97         | 60                     | 40   | 0    | 0     | 313        | 888        |
| PHF                                                        | .000                         | .000 | .000 | .000  | .000       | .000                   | .250 | .804 | .000  | .815       | .910                         | .000 | .500 | .000  | .921       | .250                   | .500 | .000 | .000  | .313       | .888       |



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File Name : PM\_Phillipine Sea - Roosevelt Ave

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | PHILLIPINE SEA<br>From North |      |      |       | ROOSEVELT AVE<br>From East |      |      |       | PHILLIPINE SEA<br>From South |      |      |       | ROOSEVELT AVE<br>From West |      |      |       | Int. Total |
|-------------|------------------------------|------|------|-------|----------------------------|------|------|-------|------------------------------|------|------|-------|----------------------------|------|------|-------|------------|
|             | Rght                         | Thru | Left | Other | Rght                       | Thru | Left | Other | Rght                         | Thru | Left | Other | Rght                       | Thru | Left | Other |            |
| 03:30 PM    | 27                           | 1    | 8    | 0     | 3                          | 91   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 134  | 36   | 0     | 300        |
| 03:45 PM    | 25                           | 0    | 4    | 0     | 3                          | 75   | 0    | 0     | 0                            | 0    | 0    | 0     | 1                          | 143  | 49   | 0     | 300        |
| Total       | 52                           | 1    | 12   | 0     | 6                          | 166  | 0    | 0     | 0                            | 0    | 0    | 0     | 1                          | 277  | 85   | 0     | 600        |
| 04:00 PM    | 25                           | 0    | 0    | 0     | 3                          | 85   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 137  | 44   | 0     | 294        |
| 04:15 PM    | 37                           | 0    | 5    | 0     | 6                          | 86   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 149  | 43   | 0     | 326        |
| 04:30 PM    | 38                           | 0    | 5    | 0     | 5                          | 91   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 136  | 41   | 0     | 316        |
| 04:45 PM    | 23                           | 0    | 4    | 0     | 3                          | 69   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 161  | 44   | 0     | 304        |
| Total       | 123                          | 0    | 14   | 0     | 17                         | 331  | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 583  | 172  | 0     | 1240       |
| 05:00 PM    | 17                           | 0    | 4    | 0     | 5                          | 69   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 161  | 44   | 0     | 300        |
| 05:15 PM    | 33                           | 0    | 5    | 0     | 2                          | 72   | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 132  | 45   | 0     | 289        |
| Grand Total | 225                          | 1    | 35   | 0     | 30                         | 638  | 0    | 0     | 0                            | 0    | 0    | 0     | 1                          | 1153 | 346  | 0     | 2429       |
| Apprch %    | 86.2                         | 0.4  | 13.4 | 0     | 4.5                        | 95.5 | 0    | 0     | 0                            | 0    | 0    | 0     | 0.1                        | 76.9 | 23.1 | 0     |            |
| Total %     | 9.3                          | 0    | 1.4  | 0     | 1.2                        | 26.3 | 0    | 0     | 0                            | 0    | 0    | 0     | 0                          | 47.5 | 14.2 | 0     |            |

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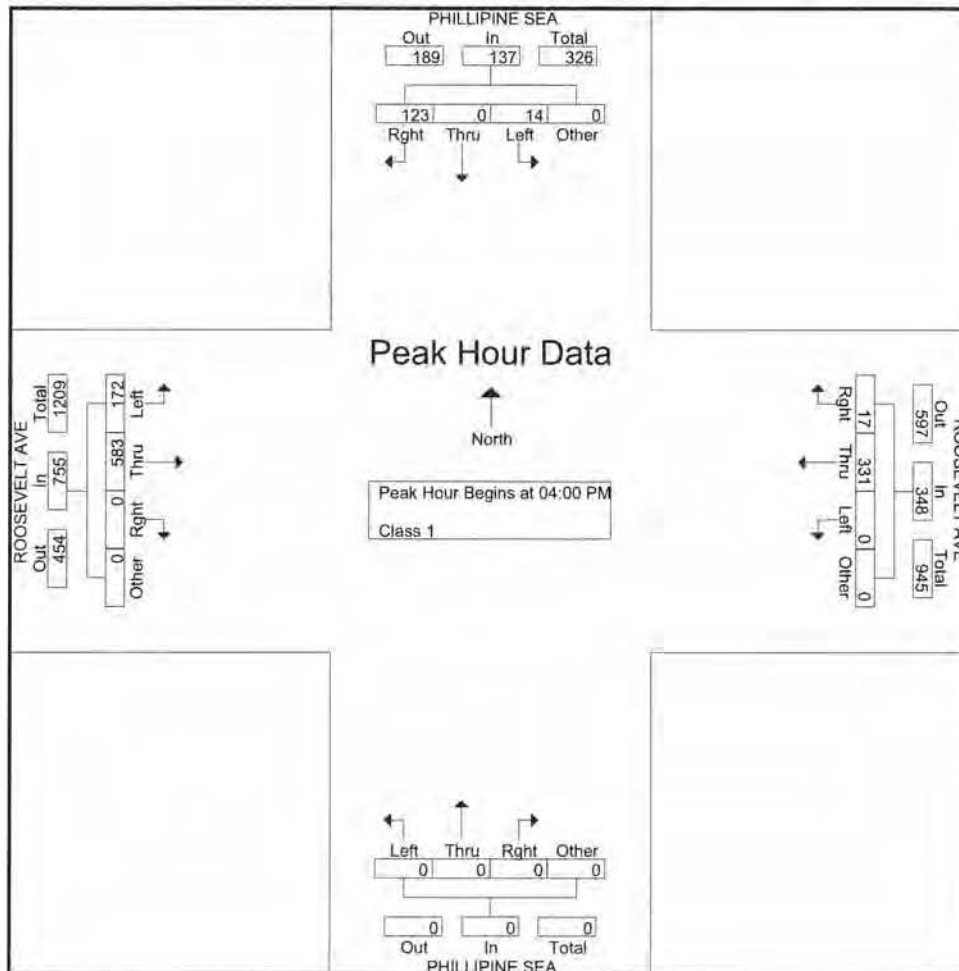
File Name : PM\_Phillipine Sea - Roosevelt Ave

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | PHILLIPINE SEA<br>From North |      |      |       |            | ROOSEVELT AVE<br>From East |      |      |       |            | PHILLIPINE SEA<br>From South |      |      |       |            | ROOSEVELT AVE<br>From West |      |      |       |            |            |
|------------------------------------------------------------|------------------------------|------|------|-------|------------|----------------------------|------|------|-------|------------|------------------------------|------|------|-------|------------|----------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Rght                         | Thru | Left | Other | App. Total | Rght                       | Thru | Left | Other | App. Total | Rght                         | Thru | Left | Other | App. Total | Rght                       | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                              |      |      |       |            |                            |      |      |       |            |                              |      |      |       |            |                            |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                              |      |      |       |            |                            |      |      |       |            |                              |      |      |       |            |                            |      |      |       |            |            |
| 04:00 PM                                                   | 25                           | 0    | 0    | 0     | 25         | 3                          | 85   | 0    | 0     | 88         | 0                            | 0    | 0    | 0     | 0          | 0                          | 137  | 44   | 0     | 181        | 294        |
| 04:15 PM                                                   | 37                           | 0    | 5    | 0     | 42         | 6                          | 86   | 0    | 0     | 92         | 0                            | 0    | 0    | 0     | 0          | 0                          | 149  | 43   | 0     | 192        | 326        |
| 04:30 PM                                                   | 38                           | 0    | 5    | 0     | 43         | 5                          | 91   | 0    | 0     | 96         | 0                            | 0    | 0    | 0     | 0          | 0                          | 136  | 41   | 0     | 177        | 316        |
| 04:45 PM                                                   | 23                           | 0    | 4    | 0     | 27         | 3                          | 69   | 0    | 0     | 72         | 0                            | 0    | 0    | 0     | 0          | 0                          | 161  | 44   | 0     | 205        | 304        |
| Total Volume                                               | 123                          | 0    | 14   | 0     | 137        | 17                         | 331  | 0    | 0     | 348        | 0                            | 0    | 0    | 0     | 0          | 0                          | 583  | 172  | 0     | 755        | 1240       |
| % App. Total                                               | 89.8                         | 0    | 10.2 | 0     |            | 4.9                        | 95.1 | 0    | 0     |            | 0                            | 0    | 0    | 0     |            | 0                          | 77.2 | 22.8 | 0     |            |            |
| PHF                                                        | .809                         | .000 | .700 | .000  | .797       | .708                       | .909 | .000 | .000  | .906       | .000                         | .000 | .000 | .000  | .000       | .000                       | .905 | .977 | .000  | .921       | .951       |



# Austin Tsutsumi & Associates

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File Name : PM\_Renton Rd - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Unshifted

|             | RENTON RD<br>From North |      |      |      | KAPOLEI PKWY<br>From East |      |      |      | RENTON RD<br>From South |      |      |      | KAPOLEI PKWY<br>From West |      |      |         |      |            |
|-------------|-------------------------|------|------|------|---------------------------|------|------|------|-------------------------|------|------|------|---------------------------|------|------|---------|------|------------|
| Start Time  | Right                   | Thru | Left | Peds | Right                     | Thru | Left | Peds | Right                   | Thru | Left | Peds | Right                     | Thru | Left | U-Turns | Peds | Int. Total |
| 03:30 PM    | 35                      | 16   | 43   | 1    | 41                        | 121  | 4    | 0    | 10                      | 19   | 11   | 1    | 12                        | 141  | 34   | 0       | 0    | 489        |
| 03:45 PM    | 36                      | 15   | 41   | 0    | 44                        | 108  | 2    | 0    | 11                      | 28   | 12   | 0    | 13                        | 126  | 38   | 0       | 0    | 474        |
| Total       | 71                      | 31   | 84   | 1    | 85                        | 229  | 6    | 0    | 21                      | 47   | 23   | 1    | 25                        | 267  | 72   | 0       | 0    | 963        |
| 04:00 PM    | 51                      | 16   | 45   | 3    | 25                        | 101  | 12   | 0    | 12                      | 30   | 18   | 0    | 8                         | 125  | 47   | 0       | 0    | 493        |
| 04:15 PM    | 36                      | 20   | 37   | 2    | 28                        | 98   | 9    | 0    | 13                      | 22   | 14   | 0    | 13                        | 136  | 38   | 0       | 0    | 466        |
| 04:30 PM    | 46                      | 16   | 39   | 0    | 22                        | 97   | 6    | 0    | 12                      | 28   | 9    | 0    | 14                        | 153  | 48   | 0       | 0    | 490        |
| 04:45 PM    | 33                      | 10   | 37   | 5    | 35                        | 86   | 5    | 1    | 19                      | 19   | 16   | 4    | 13                        | 171  | 51   | 1       | 0    | 506        |
| Total       | 166                     | 62   | 158  | 10   | 110                       | 382  | 32   | 1    | 56                      | 99   | 57   | 4    | 48                        | 585  | 184  | 1       | 0    | 1955       |
| 05:00 PM    | 37                      | 15   | 35   | 1    | 22                        | 87   | 4    | 1    | 11                      | 24   | 11   | 0    | 12                        | 187  | 33   | 0       | 0    | 480        |
| 05:15 PM    | 41                      | 24   | 36   | 1    | 30                        | 91   | 9    | 0    | 10                      | 35   | 10   | 0    | 12                        | 136  | 29   | 1       | 0    | 465        |
| Grand Total | 315                     | 132  | 313  | 13   | 247                       | 789  | 51   | 2    | 98                      | 205  | 101  | 5    | 97                        | 1175 | 318  | 2       | 0    | 3863       |
| Apprch %    | 40.8                    | 17.1 | 40.5 | 1.7  | 22.7                      | 72.5 | 4.7  | 0.2  | 24                      | 50.1 | 24.7 | 1.2  | 6.1                       | 73.8 | 20   | 0.1     | 0    |            |
| Total %     | 8.2                     | 3.4  | 8.1  | 0.3  | 6.4                       | 20.4 | 1.3  | 0.1  | 2.5                     | 5.3  | 2.6  | 0.1  | 2.5                       | 30.4 | 8.2  | 0.1     | 0    |            |

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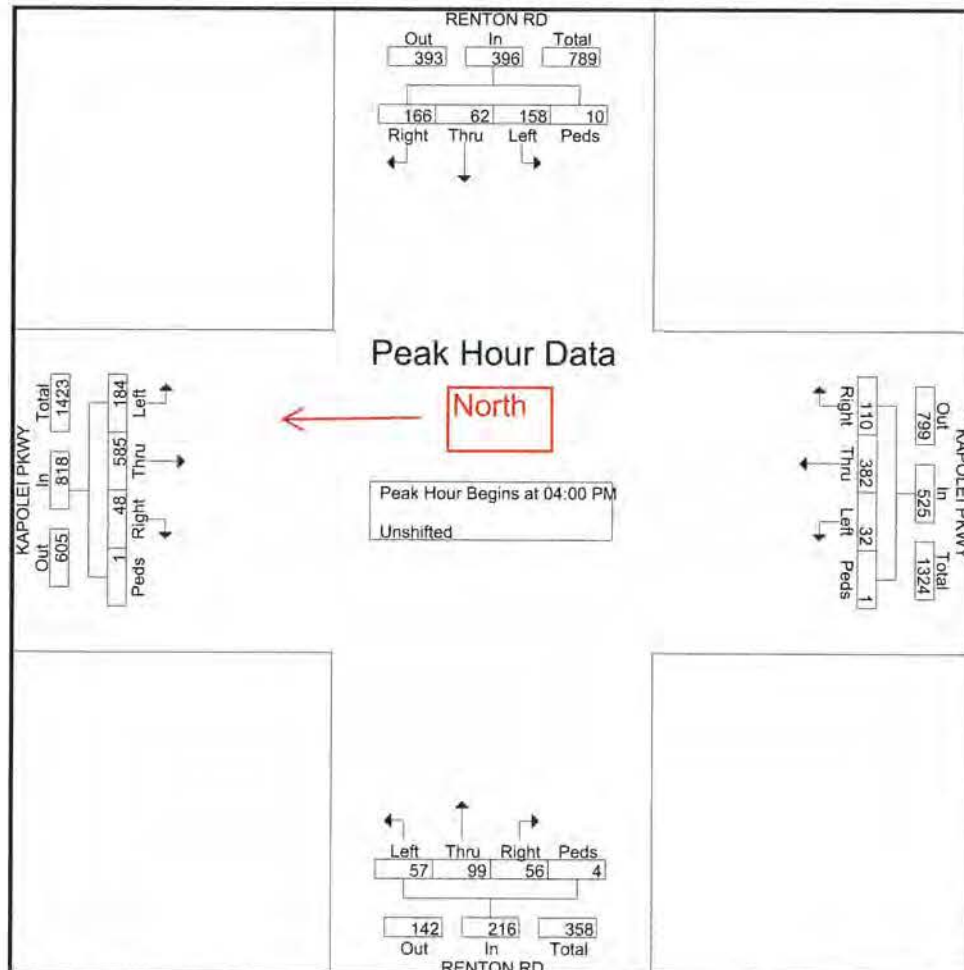
File Name : PM\_Renton Rd - Kapolei Pkwy

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | RENTON RD<br>From North |      |      |      |            | KAPOLEI PKWY<br>From East |      |      |      |            | RENTON RD<br>From South |      |      |      |            | KAPOLEI PKWY<br>From West |      |      |        |      |            |            |
|------------------------------------------------------------|-------------------------|------|------|------|------------|---------------------------|------|------|------|------------|-------------------------|------|------|------|------------|---------------------------|------|------|--------|------|------------|------------|
| Start<br>Time                                              | Right                   | Thru | Left | Peds | App. Total | Right                     | Thru | Left | Peds | App. Total | Right                   | Thru | Left | Peds | App. Total | Right                     | Thru | Left | U-Turn | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                         |      |      |      |            |                           |      |      |      |            |                         |      |      |      |            |                           |      |      |        |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                         |      |      |      |            |                           |      |      |      |            |                         |      |      |      |            |                           |      |      |        |      |            |            |
| 04:00 PM                                                   | 51                      | 16   | 45   | 3    | 115        | 25                        | 101  | 12   | 0    | 138        | 12                      | 30   | 18   | 0    | 60         | 8                         | 125  | 47   | 0      | 0    | 180        | 493        |
| 04:15 PM                                                   | 36                      | 20   | 37   | 2    | 95         | 28                        | 98   | 9    | 0    | 135        | 13                      | 22   | 14   | 0    | 49         | 13                        | 136  | 38   | 0      | 0    | 187        | 466        |
| 04:30 PM                                                   | 46                      | 16   | 39   | 0    | 101        | 22                        | 97   | 6    | 0    | 125        | 12                      | 28   | 9    | 0    | 49         | 14                        | 153  | 48   | 0      | 0    | 215        | 490        |
| 04:45 PM                                                   | 33                      | 10   | 37   | 5    | 85         | 35                        | 86   | 5    | 1    | 127        | 19                      | 19   | 16   | 4    | 58         | 13                        | 171  | 51   | 1      | 0    | 236        | 506        |
| Total Volume                                               | 166                     | 62   | 158  | 10   | 396        | 110                       | 382  | 32   | 1    | 525        | 56                      | 99   | 57   | 4    | 216        | 48                        | 585  | 184  | 1      | 0    | 818        | 1955       |
| % App. Total                                               | 41.9                    | 15.7 | 39.9 | 2.5  |            | 21                        | 72.8 | 6.1  | 0.2  |            | 25.9                    | 45.8 | 26.4 | 1.9  |            | 5.9                       | 71.5 | 22.5 | 0.1    | 0    |            |            |
| PHF                                                        | .814                    | .775 | .878 | .500 | .861       | .786                      | .946 | .667 | .250 | .951       | .737                    | .825 | .792 | .250 | .900       | .857                      | .855 | .902 | .250   | .000 | .867       | .966       |



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File Name : PM\_WWTP Dwy #1 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | WWTP DWY #1<br>From North |      |      |       | GEIGER RD<br>From East |      |      |       | From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 03:30 PM    | 0                         | 0    | 0    | 0     | 0                      | 101  | 3    | 0     | 3          | 0    | 1    | 0     | 1                      | 129  | 0    | 0     | 238        |
| 03:45 PM    | 1                         | 0    | 0    | 0     | 0                      | 96   | 5    | 0     | 5          | 0    | 0    | 0     | 0                      | 137  | 0    | 0     | 244        |
| Total       | 1                         | 0    | 0    | 0     | 0                      | 197  | 8    | 0     | 8          | 0    | 1    | 0     | 1                      | 266  | 0    | 0     | 482        |
| 04:00 PM    | 0                         | 0    | 0    | 0     | 0                      | 71   | 1    | 0     | 2          | 0    | 0    | 0     | 0                      | 138  | 0    | 0     | 212        |
| 04:15 PM    | 0                         | 0    | 0    | 0     | 0                      | 95   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 165  | 0    | 0     | 260        |
| 04:30 PM    | 0                         | 0    | 0    | 0     | 0                      | 93   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 156  | 0    | 0     | 249        |
| 04:45 PM    | 0                         | 0    | 0    | 0     | 1                      | 93   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 158  | 1    | 0     | 253        |
| Total       | 0                         | 0    | 0    | 0     | 1                      | 352  | 1    | 0     | 2          | 0    | 0    | 0     | 0                      | 617  | 1    | 0     | 974        |
| 05:00 PM    | 2                         | 0    | 0    | 0     | 1                      | 69   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 169  | 0    | 0     | 241        |
| 05:15 PM    | 1                         | 0    | 0    | 0     | 0                      | 75   | 0    | 0     | 1          | 0    | 0    | 0     | 0                      | 167  | 0    | 0     | 244        |
| Grand Total | 4                         | 0    | 0    | 0     | 2                      | 693  | 9    | 0     | 11         | 0    | 1    | 0     | 1                      | 1219 | 1    | 0     | 1941       |
| Apprch %    | 100                       | 0    | 0    | 0     | 0.3                    | 98.4 | 1.3  | 0     | 91.7       | 0    | 8.3  | 0     | 0.1                    | 99.8 | 0.1  | 0     |            |
| Total %     | 0.2                       | 0    | 0    | 0     | 0.1                    | 35.7 | 0.5  | 0     | 0.6        | 0    | 0.1  | 0     | 0.1                    | 62.8 | 0.1  | 0     |            |

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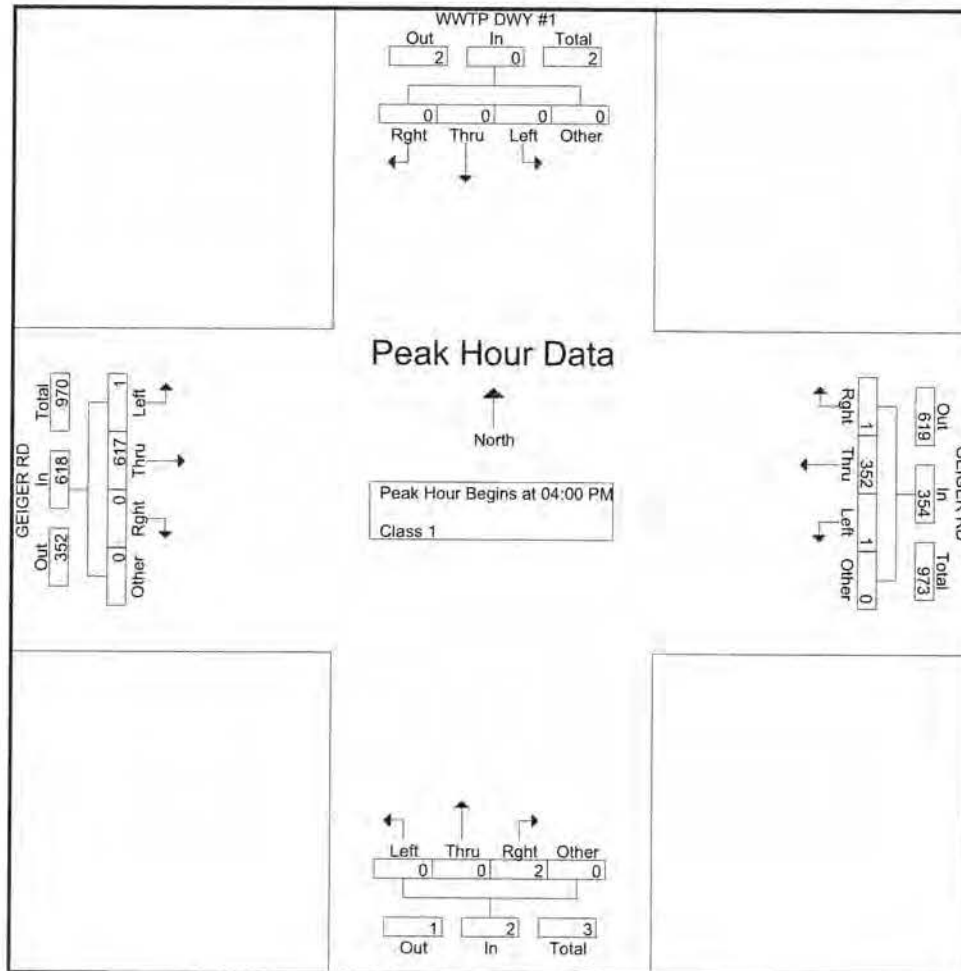
File Name : PM\_WWTP Dwy #1 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 2

|                                                            | WWTP DWY #1<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                     | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 04:00 PM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 71   | 1    | 0     | 72         | 2          | 0    | 0    | 0     | 2          | 0                      | 138  | 0    | 0     | 138        | 212        |
| 04:15 PM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 95   | 0    | 0     | 95         | 0          | 0    | 0    | 0     | 0          | 0                      | 165  | 0    | 0     | 165        | 260        |
| 04:30 PM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 93   | 0    | 0     | 93         | 0          | 0    | 0    | 0     | 0          | 0                      | 156  | 0    | 0     | 156        | 249        |
| 04:45 PM                                                   | 0                         | 0    | 0    | 0     | 0          | 1                      | 93   | 0    | 0     | 94         | 0          | 0    | 0    | 0     | 0          | 0                      | 158  | 1    | 0     | 159        | 253        |
| Total Volume                                               | 0                         | 0    | 0    | 0     | 0          | 1                      | 352  | 1    | 0     | 354        | 2          | 0    | 0    | 0     | 2          | 0                      | 617  | 1    | 0     | 618        | 974        |
| % App. Total                                               | 0                         | 0    | 0    | 0     | 0          | 0.3                    | 99.4 | 0.3  | 0     | 100        | 0          | 0    | 0    | 0     | 0          | 0                      | 99.8 | 0.2  | 0     | 0          | 0          |
| PHF                                                        | .000                      | .000 | .000 | .000  | .000       | .250                   | .926 | .250 | .000  | .932       | .250       | .000 | .000 | .000  | .250       | .000                   | .935 | .250 | .000  | .936       | .937       |



# Austin Tsutsumi & Associates

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Honolulu, HI 96817-5031

Phone: (808) 533-3646 Fax: (808) 526-1267

File Name : PM\_WWTP Dwy #2 - Geiger Rd

Site Code : 00000000

Start Date : 9/3/2014

Page No : 1

## Groups Printed- Class 1

| Start Time  | WWTP DWY #2<br>From North |      |      |       | GEIGER RD<br>From East |      |      |       | From South |      |      |       | GEIGER RD<br>From West |      |      |       | Int. Total |
|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 03:30 PM    | 0                         | 0    | 6    | 0     | 0                      | 94   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 132  | 0    | 0     | 232        |
| 03:45 PM    | 1                         | 0    | 0    | 0     | 0                      | 75   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 139  | 2    | 0     | 217        |
| Total       | 1                         | 0    | 6    | 0     | 0                      | 169  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 271  | 2    | 0     | 449        |
| 04:00 PM    | 0                         | 0    | 6    | 0     | 1                      | 96   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 161  | 0    | 0     | 264        |
| 04:15 PM    | 1                         | 0    | 2    | 0     | 1                      | 94   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 157  | 0    | 0     | 255        |
| 04:30 PM    | 1                         | 0    | 2    | 0     | 0                      | 91   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 158  | 0    | 0     | 252        |
| 04:45 PM    | 0                         | 0    | 0    | 0     | 0                      | 73   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 168  | 0    | 0     | 241        |
| Total       | 2                         | 0    | 10   | 0     | 2                      | 354  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 644  | 0    | 0     | 1012       |
| 05:00 PM    | 0                         | 0    | 2    | 0     | 0                      | 78   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 170  | 1    | 0     | 251        |
| 05:15 PM    | 2                         | 0    | 0    | 0     | 0                      | 71   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 145  | 1    | 0     | 219        |
| Grand Total | 5                         | 0    | 18   | 0     | 2                      | 672  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 1230 | 4    | 0     | 1931       |
| Apprch %    | 21.7                      | 0    | 78.3 | 0     | 0.3                    | 99.7 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 99.7 | 0.3  | 0     |            |
| Total %     | 0.3                       | 0    | 0.9  | 0     | 0.1                    | 34.8 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 63.7 | 0.2  | 0     |            |

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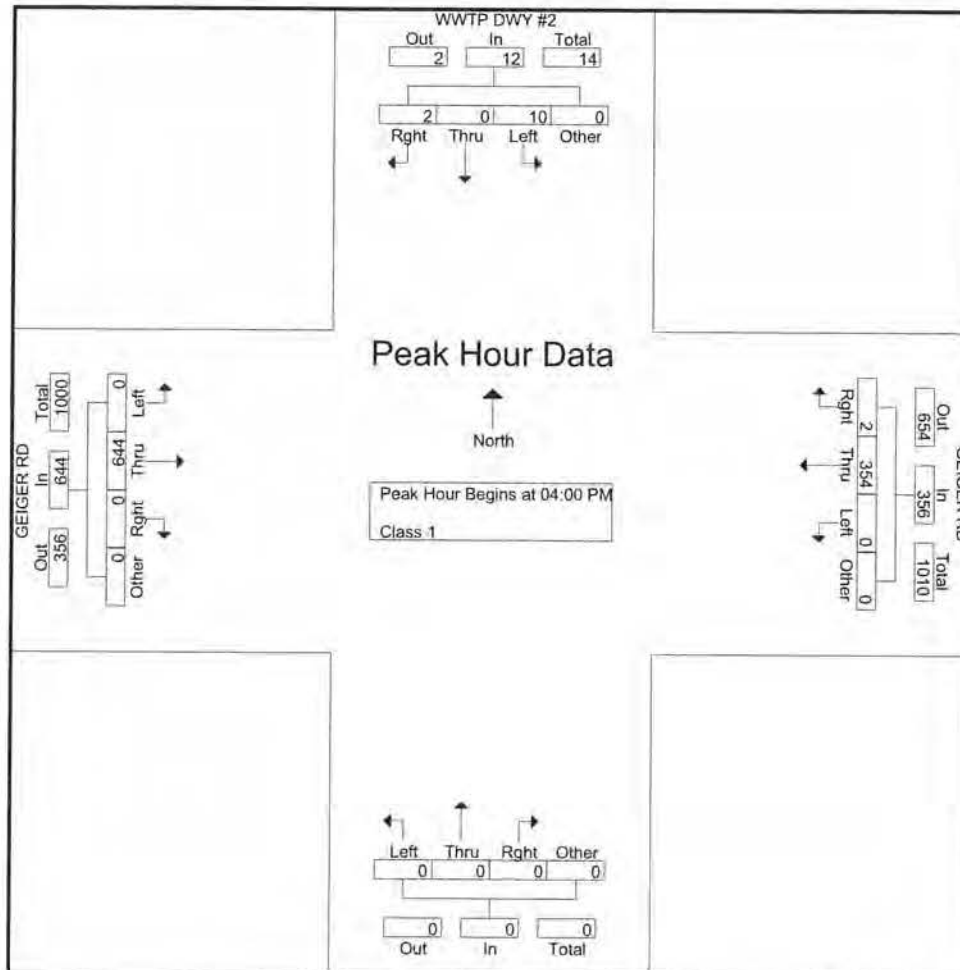
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|                                                            | WWTP DWY #2<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Rght                      | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | Rght       | Thru | Left | Other | App. Total | Rght                   | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 04:00 PM                                                   | 0                         | 0    | 6    | 0     | 6          | 1                      | 96   | 0    | 0     | 97         | 0          | 0    | 0    | 0     | 0          | 0                      | 161  | 0    | 0     | 161        | 264        |
| 04:15 PM                                                   | 1                         | 0    | 2    | 0     | 3          | 1                      | 94   | 0    | 0     | 95         | 0          | 0    | 0    | 0     | 0          | 0                      | 157  | 0    | 0     | 157        | 255        |
| 04:30 PM                                                   | 1                         | 0    | 2    | 0     | 3          | 0                      | 91   | 0    | 0     | 91         | 0          | 0    | 0    | 0     | 0          | 0                      | 158  | 0    | 0     | 158        | 252        |
| 04:45 PM                                                   | 0                         | 0    | 0    | 0     | 0          | 0                      | 73   | 0    | 0     | 73         | 0          | 0    | 0    | 0     | 0          | 0                      | 168  | 0    | 0     | 168        | 241        |
| Total Volume                                               | 2                         | 0    | 10   | 0     | 12         | 2                      | 354  | 0    | 0     | 356        | 0          | 0    | 0    | 0     | 0          | 0                      | 644  | 0    | 0     | 644        | 1012       |
| % App. Total                                               | 16.7                      | 0    | 83.3 | 0     |            | 0.6                    | 99.4 | 0    | 0     |            | 0          | 0    | 0    | 0     |            | 0                      | 100  | 0    | 0     |            |            |
| PHF                                                        | .500                      | .000 | .417 | .000  | .500       | .500                   | .922 | .000 | .000  | .918       | .000       | .000 | .000 | .000  | .000       | .000                   | .958 | .000 | .000  | .958       | .958       |



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|-------------|---------------------------|------|------|-------|------------------------|------|------|-------|------------|------|------|-------|------------------------|------|------|-------|------------|
|             | Rght                      | Thru | Left | Other | Rght                   | Thru | Left | Other | Rght       | Thru | Left | Other | Rght                   | Thru | Left | Other |            |
| 03:30 PM    | 7                         | 0    | 10   | 0     | 4                      | 93   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 125  | 7    | 0     | 246        |
| 03:45 PM    | 6                         | 0    | 1    | 0     | 5                      | 70   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 137  | 3    | 0     | 222        |
| Total       | 13                        | 0    | 11   | 0     | 9                      | 163  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 262  | 10   | 0     | 468        |
| 04:00 PM    | 3                         | 0    | 3    | 0     | 5                      | 91   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 159  | 1    | 0     | 262        |
| 04:15 PM    | 2                         | 0    | 4    | 0     | 4                      | 87   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 151  | 2    | 0     | 250        |
| 04:30 PM    | 5                         | 0    | 6    | 0     | 5                      | 89   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 154  | 4    | 0     | 263        |
| 04:45 PM    | 2                         | 0    | 6    | 0     | 5                      | 69   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 164  | 3    | 0     | 249        |
| Total       | 12                        | 0    | 19   | 0     | 19                     | 336  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 628  | 10   | 0     | 1024       |
| 05:00 PM    | 4                         | 0    | 3    | 0     | 4                      | 71   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 168  | 1    | 0     | 251        |
| 05:15 PM    | 1                         | 0    | 3    | 0     | 4                      | 71   | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 143  | 3    | 0     | 225        |
| Grand Total | 30                        | 0    | 36   | 0     | 36                     | 641  | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 1201 | 24   | 0     | 1968       |
| Apprch %    | 45.5                      | 0    | 54.5 | 0     | 5.3                    | 94.7 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 98   | 2    | 0     |            |
| Total %     | 1.5                       | 0    | 1.8  | 0     | 1.8                    | 32.6 | 0    | 0     | 0          | 0    | 0    | 0     | 0                      | 61   | 1.2  | 0     |            |

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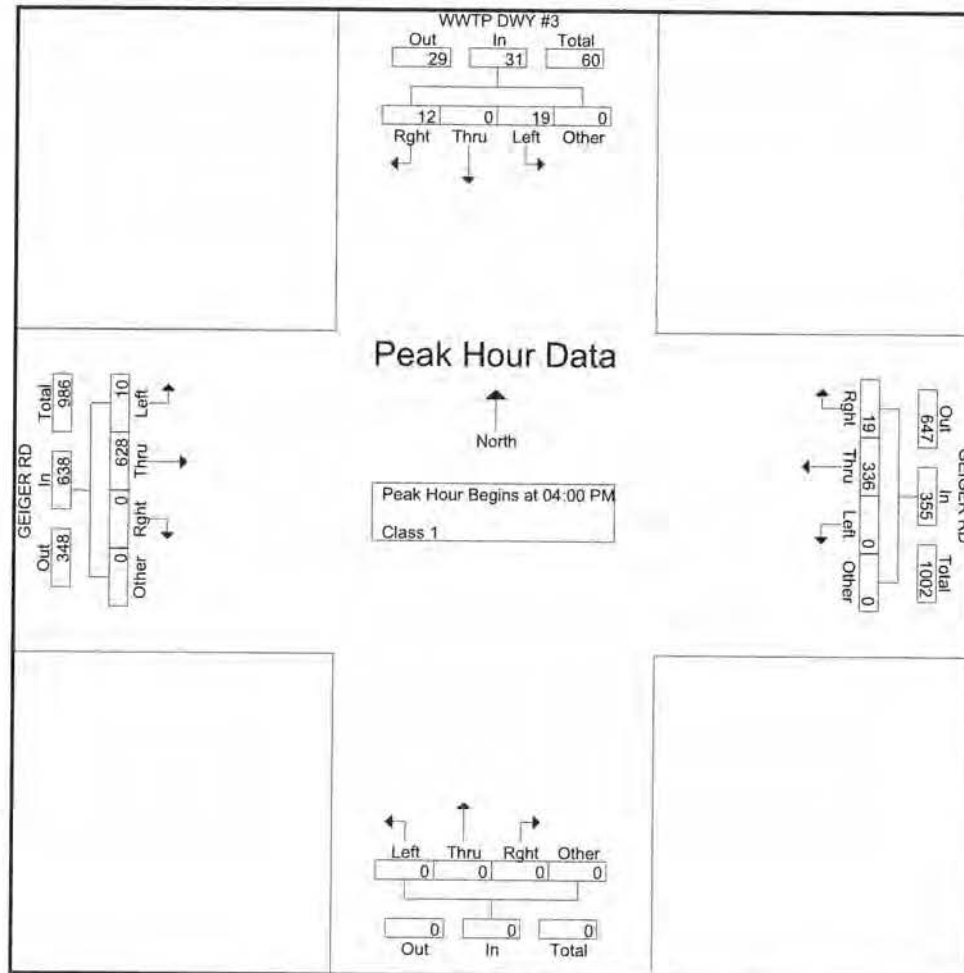
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|                                                            | WWTP DWY #3<br>From North |      |      |       |            | GEIGER RD<br>From East |      |      |       |            | From South |      |      |       |            | GEIGER RD<br>From West |      |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|------|------|-------|------------|------------------------|------|------|-------|------------|------------|
| Start Time                                                 | Right                     | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Right      | Thru | Left | Other | App. Total | Right                  | Thru | Left | Other | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1 |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                           |      |      |       |            |                        |      |      |       |            |            |      |      |       |            |                        |      |      |       |            |            |
| 04:00 PM                                                   | 3                         | 0    | 3    | 0     | 6          | 5                      | 91   | 0    | 0     | 96         | 0          | 0    | 0    | 0     | 0          | 0                      | 159  | 1    | 0     | 160        | 262        |
| 04:15 PM                                                   | 2                         | 0    | 4    | 0     | 6          | 4                      | 87   | 0    | 0     | 91         | 0          | 0    | 0    | 0     | 0          | 0                      | 151  | 2    | 0     | 153        | 250        |
| 04:30 PM                                                   | 5                         | 0    | 6    | 0     | 11         | 5                      | 89   | 0    | 0     | 94         | 0          | 0    | 0    | 0     | 0          | 0                      | 154  | 4    | 0     | 158        | 263        |
| 04:45 PM                                                   | 2                         | 0    | 6    | 0     | 8          | 5                      | 69   | 0    | 0     | 74         | 0          | 0    | 0    | 0     | 0          | 0                      | 164  | 3    | 0     | 167        | 249        |
| Total Volume                                               | 12                        | 0    | 19   | 0     | 31         | 19                     | 336  | 0    | 0     | 355        | 0          | 0    | 0    | 0     | 0          | 0                      | 628  | 10   | 0     | 638        | 1024       |
| % App. Total                                               | 38.7                      | 0    | 61.3 | 0     |            | 5.4                    | 94.6 | 0    | 0     |            | 0          | 0    | 0    | 0     |            | 0                      | 98.4 | 1.6  | 0     |            |            |
| PHF                                                        | .600                      | .000 | .792 | .000  | .705       | .950                   | .923 | .000 | .000  | .924       | .000       | .000 | .000 | .000  | .000       | .000                   | .957 | .625 | .000  | .955       | .973       |





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## APPENDIX B

### Level of Service Criteria

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## APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

### VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 2010)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

| Level of Service | Control Delay per Vehicle (sec./veh.) |
|------------------|---------------------------------------|
| A                | < 10.0                                |
| B                | >10.0 and ≤ 20.0                      |
| C                | >20.0 and ≤ 35.0                      |
| D                | >35.0 and ≤ 55.0                      |
| E                | >55.0 and ≤ 80.0                      |
| F                | > 80.0                                |

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

### VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2010)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

| Level of Service | Average Control Delay (sec/veh) |
|------------------|---------------------------------|
| A                | ≤ 10                            |
| B                | >10 and ≤15                     |
| C                | >15 and ≤25                     |
| D                | >25 and ≤35                     |
| E                | >35 and ≤50                     |
| F                | > 50                            |



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## APPENDIX C

### Full Level of Service Table

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10

[illegible]

Note:  
† = over-capacity,  $\text{W/O} > 1$





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## APPENDIX D

### Level of Service Calculations

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# HCM 2010 Signalized Intersection Summary

## 1: Kapolei Pkwy & Kualakai Pkwy

10/24/2014

|                                           |  |  |  |  |  |  |   |   |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                                  | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations                       |  |  |  |  |  |  |   |   |
| Volume (veh/h)                            | 333                                                                               | 364                                                                               | 604                                                                               | 360                                                                               | 170                                                                               | 208                                                                               |   |   |
| Number                                    | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 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                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h                      | 362                                                                               | 396                                                                               | 657                                                                               | 391                                                                               | 185                                                                               | 226                                                                               |   |   |
| Adj No. of Lanes                          | 2                                                                                 | 3                                                                                 | 3                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Peak Hour Factor                          | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                                | 550                                                                               | 3242                                                                              | 1842                                                                              | 1376                                                                              | 453                                                                               | 812                                                                               |   |   |
| Arrive On Green                           | 0.16                                                                              | 0.64                                                                              | 0.36                                                                              | 0.36                                                                              | 0.13                                                                              | 0.13                                                                              |   |   |
| Sat Flow, veh/h                           | 3442                                                                              | 5253                                                                              | 5253                                                                              | 2787                                                                              | 3442                                                                              | 2787                                                                              |   |   |
| Grp Volume(v), veh/h                      | 362                                                                               | 396                                                                               | 657                                                                               | 391                                                                               | 185                                                                               | 226                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1695                                                                              | 1695                                                                              | 1393                                                                              | 1721                                                                              | 1393                                                                              |   |   |
| Q Serve(g_s), s                           | 5.1                                                                               | 1.6                                                                               | 4.9                                                                               | 4.3                                                                               | 2.6                                                                               | 3.3                                                                               |   |   |
| Cycle Q Clear(g_c), s                     | 5.1                                                                               | 1.6                                                                               | 4.9                                                                               | 4.3                                                                               | 2.6                                                                               | 3.3                                                                               |   |   |
| Prop In Lane                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h                    | 550                                                                               | 3242                                                                              | 1842                                                                              | 1376                                                                              | 453                                                                               | 812                                                                               |   |   |
| V/C Ratio(X)                              | 0.66                                                                              | 0.12                                                                              | 0.36                                                                              | 0.28                                                                              | 0.41                                                                              | 0.28                                                                              |   |   |
| Avail Cap(c_a), veh/h                     | 1788                                                                              | 7925                                                                              | 4696                                                                              | 2940                                                                              | 2781                                                                              | 2697                                                                              |   |   |
| 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                  | 20.5                                                                              | 3.7                                                                               | 12.1                                                                              | 7.7                                                                               | 20.7                                                                              | 14.2                                                                              |   |   |
| Incr Delay (d2), s/veh                    | 1.3                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.6                                                                               | 0.2                                                                               |   |   |
| 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                                                                               | 0.7                                                                               | 2.3                                                                               | 2.1                                                                               | 1.2                                                                               | 2.8                                                                               |   |   |
| LnGrp Delay(d),s/veh                      | 21.8                                                                              | 3.7                                                                               | 12.3                                                                              | 7.9                                                                               | 21.3                                                                              | 14.4                                                                              |   |   |
| LnGrp LOS                                 | C                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 | C                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h                       |                                                                                   | 758                                                                               | 1048                                                                              |                                                                                   | 411                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh                     |                                                                                   | 12.4                                                                              | 10.6                                                                              |                                                                                   | 17.5                                                                              |                                                                                   |   |   |
| Approach LOS                              |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |   |   |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                              |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s                  |                                                                                   | 39.1                                                                              |                                                                                   | 12.8                                                                              | 14.3                                                                              | 24.8                                                                              |   |   |
| Change Period (Y+Rc), s                   |                                                                                   | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               |   |   |
| Max Green Setting (Gmax), s               |                                                                                   | 81.0                                                                              |                                                                                   | 42.0                                                                              | 27.0                                                                              | 48.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s              |                                                                                   | 3.6                                                                               |                                                                                   | 5.3                                                                               | 7.1                                                                               | 6.9                                                                               |   |   |
| Green Ext Time (p_c), s                   |                                                                                   | 12.8                                                                              |                                                                                   | 1.6                                                                               | 1.2                                                                               | 11.9                                                                              |   |   |
| Intersection Summary                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay                       |                                                                                   |                                                                                   | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                              |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| Notes                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary 2: Kapolei Pkwy & Renton Rd

10/24/2014

|                              |  |  |  |  |  |  |    |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Volume (veh/h)               | 24                                                                                | 61                                                                                | 16                                                                                | 288                                                                               | 108                                                                               | 290                                                                               | 43                                                                                  | 705                                                                                 | 350                                                                                 | 213                                                                                 | 289                                                                                 | 42                                                                                  |
| Number                       | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 26                                                                                | 66                                                                                | 12                                                                                | 313                                                                               | 117                                                                               | 82                                                                                | 47                                                                                  | 766                                                                                 | 300                                                                                 | 232                                                                                 | 314                                                                                 | 32                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 3                                                                                   | 0                                                                                   | 1                                                                                   | 3                                                                                   | 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, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 376                                                                               | 460                                                                               | 84                                                                                | 431                                                                               | 559                                                                               | 475                                                                               | 61                                                                                  | 1267                                                                                | 492                                                                                 | 274                                                                                 | 2216                                                                                | 222                                                                                 |
| Arrive On Green              | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              | 0.30                                                                              | 0.03                                                                                | 0.35                                                                                | 0.35                                                                                | 0.15                                                                                | 0.47                                                                                | 0.47                                                                                |
| Sat Flow, veh/h              | 1179                                                                              | 1535                                                                              | 279                                                                               | 1316                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 3606                                                                                | 1400                                                                                | 1774                                                                                | 4700                                                                                | 470                                                                                 |
| Grp Volume(v), veh/h         | 26                                                                                | 0                                                                                 | 78                                                                                | 313                                                                               | 117                                                                               | 82                                                                                | 47                                                                                  | 720                                                                                 | 346                                                                                 | 232                                                                                 | 225                                                                                 | 121                                                                                 |
| Grp Sat Flow(s), veh/h/ln    | 1179                                                                              | 0                                                                                 | 1814                                                                              | 1316                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 1695                                                                                | 1616                                                                                | 1774                                                                                | 1695                                                                                | 1780                                                                                |
| Q Serve(g_s), s              | 1.6                                                                               | 0.0                                                                               | 2.9                                                                               | 21.2                                                                              | 4.3                                                                               | 3.5                                                                               | 2.4                                                                                 | 16.2                                                                                | 16.4                                                                                | 11.8                                                                                | 3.5                                                                                 | 3.6                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 0.0                                                                               | 2.9                                                                               | 24.1                                                                              | 4.3                                                                               | 3.5                                                                               | 2.4                                                                                 | 16.2                                                                                | 16.4                                                                                | 11.8                                                                                | 3.5                                                                                 | 3.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.15                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.87                                                                                | 1.00                                                                                |                                                                                     | 0.26                                                                                |
| Lane Grp Cap(c), veh/h       | 376                                                                               | 0                                                                                 | 544                                                                               | 431                                                                               | 559                                                                               | 475                                                                               | 61                                                                                  | 1191                                                                                | 568                                                                                 | 274                                                                                 | 1599                                                                                | 839                                                                                 |
| V/C Ratio(X)                 | 0.07                                                                              | 0.00                                                                              | 0.14                                                                              | 0.73                                                                              | 0.21                                                                              | 0.17                                                                              | 0.77                                                                                | 0.60                                                                                | 0.61                                                                                | 0.85                                                                                | 0.14                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 455                                                                               | 0                                                                                 | 665                                                                               | 519                                                                               | 683                                                                               | 581                                                                               | 555                                                                                 | 2889                                                                                | 1377                                                                                | 555                                                                                 | 2889                                                                                | 1516                                                                                |
| 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                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 26.4                                                                              | 0.0                                                                               | 23.7                                                                              | 32.5                                                                              | 24.2                                                                              | 24.0                                                                              | 44.4                                                                                | 24.8                                                                                | 24.8                                                                                | 38.1                                                                                | 13.9                                                                                | 13.9                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 4.1                                                                               | 0.2                                                                               | 0.2                                                                               | 18.5                                                                                | 0.5                                                                                 | 1.1                                                                                 | 7.1                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| 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     | 0.5                                                                               | 0.0                                                                               | 1.5                                                                               | 8.1                                                                               | 2.3                                                                               | 1.6                                                                               | 1.5                                                                                 | 7.7                                                                                 | 7.5                                                                                 | 6.3                                                                                 | 1.6                                                                                 | 1.8                                                                                 |
| LnGrp Delay(d),s/veh         | 26.5                                                                              | 0.0                                                                               | 23.9                                                                              | 36.6                                                                              | 24.4                                                                              | 24.1                                                                              | 62.9                                                                                | 25.3                                                                                | 25.9                                                                                | 45.2                                                                                | 13.9                                                                                | 14.0                                                                                |
| LnGrp LOS                    | C                                                                                 |                                                                                   | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 104                                                                               |                                                                                   |                                                                                   | 512                                                                               |                                                                                   |                                                                                     | 1113                                                                                |                                                                                     |                                                                                     | 578                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   | 31.8                                                                              |                                                                                   |                                                                                     | 27.0                                                                                |                                                                                     |                                                                                     | 26.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | 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     | 20.3                                                                              | 38.6                                                                              |                                                                                   | 33.8                                                                              | 9.2                                                                               | 49.7                                                                              |                                                                                     | 33.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 29.0                                                                              | 79.0                                                                              |                                                                                   | 34.0                                                                              | 29.0                                                                              | 79.0                                                                              |                                                                                     | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.8                                                                              | 18.4                                                                              |                                                                                   | 26.1                                                                              | 4.4                                                                               | 5.6                                                                               |                                                                                     | 7.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.6                                                                               | 14.2                                                                              |                                                                                   | 1.7                                                                               | 0.1                                                                               | 14.4                                                                              |                                                                                     | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 TWSC  
3: Phillipine Sea & Renton Rd

10/13/2014

Intersection

Int Delay, s/veh 7.8

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 1    | 1    | 181  | 1    | 2    | 80   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| 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, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1    | 1    | 197  | 1    | 2    | 87   |

| Major/Minor          | Major1 |   | Major2 |   | Minor1 |       |
|----------------------|--------|---|--------|---|--------|-------|
| Conflicting Flow All | 0      | 0 | 2      | 0 | 397    | 2     |
| Stage 1              | -      | - | -      | - | 2      | -     |
| Stage 2              | -      | - | -      | - | 395    | -     |
| Critical Hdwy        | -      | - | 4.12   | - | 6.42   | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | - | 5.42   | -     |
| Critical Hdwy Stg 2  | -      | - | -      | - | 5.42   | -     |
| Follow-up Hdwy       | -      | - | 2.218  | - | 3.518  | 3.318 |
| Pot Cap-1 Maneuver   | -      | - | 1620   | - | 608    | 1082  |
| Stage 1              | -      | - | -      | - | 1021   | -     |
| Stage 2              | -      | - | -      | - | 681    | -     |
| Platoon blocked, %   | -      | - | -      | - | -      | -     |
| Mov Cap-1 Maneuver   | -      | - | 1620   | - | 534    | 1082  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | 534    | -     |
| Stage 1              | -      | - | -      | - | 1021   | -     |
| Stage 2              | -      | - | -      | - | 598    | -     |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 7.5 | 8.7 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 1056  | -   | -   | 1620  | -   |
| HCM Lane V/C Ratio    | 0.084 | -   | -   | 0.121 | -   |
| HCM Control Delay (s) | 8.7   | -   | -   | 7.5   | 0   |
| HCM Lane LOS          | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.3   | -   | -   | 0.4   | -   |

HCM 2010 TWSC  
4: Phillipine Sea & Roosevelt Ave

10/13/2014

| Intersection             |        |      |      |        |      |      |        |       |       |        |       |       |
|--------------------------|--------|------|------|--------|------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh         | 3.6    |      |      |        |      |      |        |       |       |        |       |       |
|                          |        |      |      |        |      |      |        |       |       |        |       |       |
| Movement                 | EBL    | EBT  | EBR  | WBL    | WBT  | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Vol, veh/h               | 64     | 267  | 0    | 0      | 530  | 14   | 0      | 0     | 0     | 11     | 0     | 166   |
| Conflicting Peds, #/hr   | 0      | 0    | 0    | 0      | 0    | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control             | Free   | Free | Free | Free   | Free | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized           | -      | -    | None | -      | -    | None | -      | -     | None  | -      | -     | None  |
| Storage Length           | -      | -    | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, # | -      | 0    | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                 | -      | 0    | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor         | 92     | 92   | 92   | 92     | 92   | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %        | 2      | 2    | 2    | 2      | 2    | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                | 70     | 290  | 0    | 0      | 576  | 15   | 0      | 0     | 0     | 12     | 0     | 180   |
|                          |        |      |      |        |      |      |        |       |       |        |       |       |
| Major/Minor              | Major1 |      |      | Major2 |      |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All     | 591    | 0    | 0    | 290    | 0    | 0    | 1103   | 1020  | 290   | 1013   | 1013  | 584   |
| Stage 1                  | -      | -    | -    | -      | -    | -    | 429    | 429   | -     | 584    | 584   | -     |
| Stage 2                  | -      | -    | -    | -      | -    | -    | 674    | 591   | -     | 429    | 429   | -     |
| Critical Hdwy            | 4.12   | -    | -    | 4.12   | -    | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1      | -      | -    | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2      | -      | -    | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy           | 2.218  | -    | -    | 2.218  | -    | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver       | 985    | -    | -    | 1272   | -    | -    | 189    | 237   | 749   | 217    | 239   | 512   |
| Stage 1                  | -      | -    | -    | -      | -    | -    | 604    | 584   | -     | 498    | 498   | -     |
| Stage 2                  | -      | -    | -    | -      | -    | -    | 444    | 494   | -     | 604    | 584   | -     |
| Platoon blocked, %       |        | -    | -    |        | -    | -    |        |       |       |        |       |       |
| Mov Cap-1 Maneuver       | 985    | -    | -    | 1272   | -    | -    | 114    | 217   | 749   | 203    | 219   | 512   |
| Mov Cap-2 Maneuver       | -      | -    | -    | -      | -    | -    | 114    | 217   | -     | 203    | 219   | -     |
| Stage 1                  | -      | -    | -    | -      | -    | -    | 553    | 534   | -     | 456    | 498   | -     |
| Stage 2                  | -      | -    | -    | -      | -    | -    | 288    | 494   | -     | 553    | 534   | -     |
|                          |        |      |      |        |      |      |        |       |       |        |       |       |
| Approach                 | EB     |      |      | WB     |      |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s     | 1.7    |      |      | 0      |      |      | 0      |       |       | 18     |       |       |
| HCM LOS                  |        |      |      |        |      |      | A      |       |       | C      |       |       |

HCM 2010 TWSC  
5: Essex Rd & Roosevelt Ave/Geiger Rd

10/13/2014

| Intersection             |        |      |        |      |        |       |
|--------------------------|--------|------|--------|------|--------|-------|
| Int Delay, s/veh         | 0.4    |      |        |      |        |       |
| Movement                 | EBT    | EBR  | WBL    | WBT  | NBL    | NBR   |
| Vol, veh/h               | 265    | 5    | 23     | 556  | 5      | 4     |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None | -      | None | -      | None  |
| Storage Length           | -      | -    | 50     | -    | 0      | -     |
| Veh in Median Storage, # | 0      | -    | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -    | -      | 0    | 0      | -     |
| Peak Hour Factor         | 92     | 92   | 92     | 92   | 92     | 92    |
| Heavy Vehicles, %        | 2      | 2    | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 288    | 5    | 25     | 604  | 5      | 4     |
| Major/Minor              | Major1 |      | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0    | 293    | 0    | 945    | 291   |
| Stage 1                  | -      | -    | -      | -    | 291    | -     |
| Stage 2                  | -      | -    | -      | -    | 654    | -     |
| Critical Hdwy            | -      | -    | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -    | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -    | 1269   | -    | 291    | 748   |
| Stage 1                  | -      | -    | -      | -    | 759    | -     |
| Stage 2                  | -      | -    | -      | -    | 517    | -     |
| Platoon blocked, %       | -      | -    | -      | -    | -      | -     |
| Mov Cap-1 Maneuver       | -      | -    | 1269   | -    | 285    | 748   |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | 285    | -     |
| Stage 1                  | -      | -    | -      | -    | 759    | -     |
| Stage 2                  | -      | -    | -      | -    | 507    | -     |
| Approach                 | EB     |      | WB     |      | NB     |       |
| HCM Control Delay, s     | 0      |      | 0.3    |      | 14.4   |       |
| HCM LOS                  |        |      |        |      | B      |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBL  | WBT    |       |
| Capacity (veh/h)         | 393    | -    | -      | 1269 | -      |       |
| HCM Lane V/C Ratio       | 0.025  | -    | -      | 0.02 | -      |       |
| HCM Control Delay (s)    | 14.4   | -    | -      | 7.9  | -      |       |
| HCM Lane LOS             | B      | -    | -      | A    | -      |       |
| HCM 95th %tile Q(veh)    | 0.1    | -    | -      | 0.1  | -      |       |

# HCM 2010 TWSC

## 6: Geiger Rd & Ewa Refuse Convenience Center

10/13/2014

### Intersection

Int Delay, s/veh 0.3

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 271  | 1    | 8    | 592  | 0    | 3    | 0    | 15   | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 295  | 1    | 9    | 643  | 0    | 3    | 0    | 16   | 0    | 0    | 0    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 643    | 0 | 0 | 296    | 0 | 0 | 956    | 956   | 295   | 964    | 957   | 643   |
| Stage 1              | -      | - | - | -      | - | - | 295    | 295   | -     | 661    | 661   | -     |
| Stage 2              | -      | - | - | -      | - | - | 661    | 661   | -     | 303    | 296   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 942    | - | - | 1265   | - | - | 238    | 258   | 744   | 235    | 258   | 473   |
| Stage 1              | -      | - | - | -      | - | - | 713    | 669   | -     | 452    | 460   | -     |
| Stage 2              | -      | - | - | -      | - | - | 452    | 460   | -     | 706    | 668   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 942    | - | - | 1265   | - | - | 236    | 255   | 744   | 228    | 255   | 473   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 236    | 255   | -     | 228    | 255   | -     |
| Stage 1              | -      | - | - | -      | - | - | 713    | 669   | -     | 452    | 455   | -     |
| Stage 2              | -      | - | - | -      | - | - | 447    | 455   | -     | 691    | 668   | -     |

| Approach             | EB | WB  | NB   | SB |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0  | 0.1 | 11.8 | 0  |
| HCM LOS              |    |     | B    | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 548   | 942 | -   | -   | 1265  | -   | -   | -     |
| HCM Lane V/C Ratio    | 0.036 | -   | -   | -   | 0.007 | -   | -   | -     |
| HCM Control Delay (s) | 11.8  | 0   | -   | -   | 7.9   | 0   | -   | 0     |
| HCM Lane LOS          | B     | A   | -   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0   | -   | -   | 0     | -   | -   | -     |

Intersection

Int Delay, s/veh 0.3

| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 268  | 579  | 4    | 6    | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| 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, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 291  | 629  | 4    | 7    | 11   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 634    | 0      | 923    |
| Stage 1              | -      | -      | 632    |
| Stage 2              | -      | -      | 291    |
| Critical Hdwy        | 4.12   | -      | 6.42   |
| Critical Hdwy Stg 1  | -      | -      | 5.42   |
| Critical Hdwy Stg 2  | -      | -      | 5.42   |
| Follow-up Hdwy       | 2.218  | -      | 3.518  |
| Pot Cap-1 Maneuver   | 949    | -      | 299    |
| Stage 1              | -      | -      | 530    |
| Stage 2              | -      | -      | 759    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 949    | -      | 299    |
| Mov Cap-2 Maneuver   | -      | -      | 299    |
| Stage 1              | -      | -      | 530    |
| Stage 2              | -      | -      | 759    |

| Approach             | EB | WB | SB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 14.6 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
| Capacity (veh/h)      | 949 | -   | -   | -   | 391   |
| HCM Lane V/C Ratio    | -   | -   | -   | -   | 0.044 |
| HCM Control Delay (s) | 0   | -   | -   | -   | 14.6  |
| HCM Lane LOS          | A   | -   | -   | -   | B     |
| HCM 95th %tile Q(veh) | 0   | -   | -   | -   | 0.1   |

HCM 2010 TWSC  
8: Geiger Rd & Honouliuli Drwy 2

10/13/2014

Intersection

Int Delay, s/veh 0.3

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 3    | 261  | 0    | 0    | 575  | 13   | 0    | 0    | 0    | 5    | 0    | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 3    | 284  | 0    | 0    | 625  | 14   | 0    | 0    | 0    | 5    | 0    | 8    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 639    | 0 | 0 | 284    | 0 | 0 | 926    | 929   | 284   | 922    | 922   | 632   |
| Stage 1              | -      | - | - | -      | - | - | 290    | 290   | -     | 632    | 632   | -     |
| Stage 2              | -      | - | - | -      | - | - | 636    | 639   | -     | 290    | 290   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 945    | - | - | 1278   | - | - | 249    | 268   | 755   | 251    | 270   | 480   |
| Stage 1              | -      | - | - | -      | - | - | 718    | 672   | -     | 468    | 474   | -     |
| Stage 2              | -      | - | - | -      | - | - | 466    | 470   | -     | 718    | 672   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 945    | - | - | 1278   | - | - | 244    | 267   | 755   | 250    | 269   | 480   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 244    | 267   | -     | 250    | 269   | -     |
| Stage 1              | -      | - | - | -      | - | - | 715    | 669   | -     | 466    | 474   | -     |
| Stage 2              | -      | - | - | -      | - | - | 459    | 470   | -     | 715    | 669   | -     |

| Approach             | EB  | WB | NB | SB   |
|----------------------|-----|----|----|------|
| HCM Control Delay, s | 0.1 | 0  | 0  | 15.8 |
| HCM LOS              |     |    | A  | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | -     | 945   | -   | -   | 1278 | -   | -   | 347   |
| HCM Lane V/C Ratio    | -     | 0.003 | -   | -   | -    | -   | -   | 0.038 |
| HCM Control Delay (s) | 0     | 8.8   | 0   | -   | 0    | -   | -   | 15.8  |
| HCM Lane LOS          | A     | A     | A   | -   | A    | -   | -   | C     |
| HCM 95th %tile Q(veh) | -     | 0     | -   | -   | 0    | -   | -   | 0.1   |

# HCM 2010 Signalized Intersection Summary 9: Kapolei Pkwy & Geiger Rd

10/27/2014

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 8                                                                                 | 110                                                                               | 167                                                                               | 88                                                                                | 210                                                                               | 195                                                                               | 336                                                                               | 717                                                                                 | 139                                                                                 | 146                                                                                 | 501                                                                                 | 42                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                 | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 9                                                                                 | 120                                                                               | 14                                                                                | 96                                                                                | 228                                                                               | 39                                                                                | 365                                                                               | 779                                                                                 | 64                                                                                  | 159                                                                                 | 545                                                                                 | 7                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 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                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 16                                                                                | 342                                                                               | 39                                                                                | 125                                                                               | 314                                                                               | 267                                                                               | 416                                                                               | 1476                                                                                | 661                                                                                 | 202                                                                                 | 1048                                                                                | 469                                                                                 |
| Arrive On Green              | 0.01                                                                              | 0.11                                                                              | 0.11                                                                              | 0.07                                                                              | 0.17                                                                              | 0.17                                                                              | 0.23                                                                              | 0.42                                                                                | 0.42                                                                                | 0.11                                                                                | 0.30                                                                                | 0.30                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3199                                                                              | 368                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                                | 1583                                                                                | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 9                                                                                 | 66                                                                                | 68                                                                                | 96                                                                                | 228                                                                               | 39                                                                                | 365                                                                               | 779                                                                                 | 64                                                                                  | 159                                                                                 | 545                                                                                 | 7                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1798                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                                | 1583                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 0.4                                                                               | 2.8                                                                               | 2.9                                                                               | 4.4                                                                               | 9.5                                                                               | 1.7                                                                               | 16.3                                                                              | 13.5                                                                                | 2.0                                                                                 | 7.2                                                                                 | 10.5                                                                                | 0.3                                                                                 |
| Cycle Q Clear(g_c), s        | 0.4                                                                               | 2.8                                                                               | 2.9                                                                               | 4.4                                                                               | 9.5                                                                               | 1.7                                                                               | 16.3                                                                              | 13.5                                                                                | 2.0                                                                                 | 7.2                                                                                 | 10.5                                                                                | 0.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.20                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 16                                                                                | 189                                                                               | 192                                                                               | 125                                                                               | 314                                                                               | 267                                                                               | 416                                                                               | 1476                                                                                | 661                                                                                 | 202                                                                                 | 1048                                                                                | 469                                                                                 |
| V/C Ratio(X)                 | 0.56                                                                              | 0.35                                                                              | 0.36                                                                              | 0.77                                                                              | 0.73                                                                              | 0.15                                                                              | 0.88                                                                              | 0.53                                                                                | 0.10                                                                                | 0.79                                                                                | 0.52                                                                                | 0.01                                                                                |
| Avail Cap(c_a), veh/h        | 410                                                                               | 839                                                                               | 853                                                                               | 410                                                                               | 883                                                                               | 751                                                                               | 733                                                                               | 1894                                                                                | 847                                                                                 | 733                                                                                 | 1894                                                                                | 847                                                                                 |
| 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     | 40.6                                                                              | 34.1                                                                              | 34.1                                                                              | 37.6                                                                              | 32.4                                                                              | 29.2                                                                              | 30.3                                                                              | 17.9                                                                                | 14.6                                                                                | 35.5                                                                                | 24.1                                                                                | 20.5                                                                                |
| Incr Delay (d2), s/veh       | 27.3                                                                              | 1.1                                                                               | 1.1                                                                               | 9.4                                                                               | 3.2                                                                               | 0.2                                                                               | 6.0                                                                               | 0.3                                                                                 | 0.1                                                                                 | 6.7                                                                                 | 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     | 0.3                                                                               | 1.4                                                                               | 1.5                                                                               | 2.5                                                                               | 5.2                                                                               | 0.8                                                                               | 8.7                                                                               | 6.7                                                                                 | 0.9                                                                                 | 3.9                                                                                 | 5.2                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh         | 67.8                                                                              | 35.2                                                                              | 35.2                                                                              | 46.9                                                                              | 35.6                                                                              | 29.4                                                                              | 36.3                                                                              | 18.2                                                                                | 14.6                                                                                | 42.2                                                                                | 24.5                                                                                | 20.5                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | B                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 143                                                                               |                                                                                   |                                                                                   |                                                                                   | 363                                                                               |                                                                                   | 1208                                                                              |                                                                                     |                                                                                     |                                                                                     | 711                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 37.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 38.0                                                                              |                                                                                   | 23.5                                                                              |                                                                                     |                                                                                     |                                                                                     | 28.4                                                                                |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   | 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     | 15.3                                                                              | 40.3                                                                              | 11.8                                                                              | 14.8                                                                              | 25.3                                                                              | 30.3                                                                              | 6.7                                                                               | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 34.0                                                                              | 44.0                                                                              | 19.0                                                                              | 39.0                                                                              | 34.0                                                                              | 44.0                                                                              | 19.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.2                                                                               | 15.5                                                                              | 6.4                                                                               | 4.9                                                                               | 18.3                                                                              | 12.5                                                                              | 2.4                                                                               | 11.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.4                                                                               | 11.4                                                                              | 0.2                                                                               | 2.4                                                                               | 1.0                                                                               | 11.8                                                                              | 0.0                                                                               | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis 10: Ft Weaver Rd & Geiger Rd/Iroquois Rd

10/15/2014

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)                      | 259                                                                               | 129                                                                               | 156                                                                               | 50                                                                                | 222                                                                               | 266                                                                               | 149                                                                               | 1348                                                                                | 4                                                                                   | 162                                                                                 | 875                                                                                 | 120                                                                                 |
| 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                                                                                 | 6.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 6.0                                                                                 |
| Lane Util. Factor                 | 0.91                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.88                                                                              | 0.97                                                                              | 0.91                                                                                | 1.00                                                                                | 0.97                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 0.98                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1610                                                                              | 3307                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 2787                                                                              | 3433                                                                              | 5085                                                                                | 1583                                                                                | 3433                                                                                | 5085                                                                                | 1583                                                                                |
| Flt Permitted                     | 0.95                                                                              | 0.98                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1610                                                                              | 3307                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 2787                                                                              | 3433                                                                              | 5085                                                                                | 1583                                                                                | 3433                                                                                | 5085                                                                                | 1583                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 282                                                                               | 140                                                                               | 170                                                                               | 54                                                                                | 241                                                                               | 289                                                                               | 162                                                                               | 1465                                                                                | 4                                                                                   | 176                                                                                 | 951                                                                                 | 130                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 86                                                                                | 0                                                                                 | 0                                                                                 | 199                                                                               | 0                                                                                 | 0                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 58                                                                                  |
| Lane Group Flow (vph)             | 141                                                                               | 281                                                                               | 84                                                                                | 54                                                                                | 241                                                                               | 91                                                                                | 162                                                                               | 1465                                                                                | 2                                                                                   | 176                                                                                 | 951                                                                                 | 72                                                                                  |
| Turn Type                         | Split                                                                             | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 3                                                                                 | 3                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 30.5                                                                              | 30.5                                                                              | 30.5                                                                              | 39.5                                                                              | 39.5                                                                              | 39.5                                                                              | 16.7                                                                              | 127.4                                                                               | 127.4                                                                               | 17.6                                                                                | 128.3                                                                               | 128.3                                                                               |
| Effective Green, g (s)            | 32.5                                                                              | 32.5                                                                              | 32.5                                                                              | 41.5                                                                              | 41.5                                                                              | 41.5                                                                              | 18.7                                                                              | 130.4                                                                               | 128.4                                                                               | 19.6                                                                                | 131.3                                                                               | 129.3                                                                               |
| Actuated g/C Ratio                | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.17                                                                              | 0.17                                                                              | 0.17                                                                              | 0.08                                                                              | 0.54                                                                                | 0.54                                                                                | 0.08                                                                                | 0.55                                                                                | 0.54                                                                                |
| Clearance Time (s)                | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 6.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Vehicle Extension (s)             | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 3.0                                                                               | 5.0                                                                                 | 5.0                                                                                 | 3.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Lane Grp Cap (vph)                | 218                                                                               | 447                                                                               | 214                                                                               | 306                                                                               | 322                                                                               | 481                                                                               | 267                                                                               | 2762                                                                                | 846                                                                                 | 280                                                                                 | 2781                                                                                | 852                                                                                 |
| v/s Ratio Prot                    | c0.09                                                                             | 0.08                                                                              |                                                                                   | 0.03                                                                              | c0.13                                                                             |                                                                                   | 0.05                                                                              | c0.29                                                                               |                                                                                     | c0.05                                                                               | 0.19                                                                                |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     | 0.05                                                                                |
| v/c Ratio                         | 0.65                                                                              | 0.63                                                                              | 0.39                                                                              | 0.18                                                                              | 0.75                                                                              | 0.19                                                                              | 0.61                                                                              | 0.53                                                                                | 0.00                                                                                | 0.63                                                                                | 0.34                                                                                | 0.08                                                                                |
| Uniform Delay, d1                 | 98.3                                                                              | 98.0                                                                              | 94.7                                                                              | 84.7                                                                              | 94.3                                                                              | 84.8                                                                              | 107.1                                                                             | 35.2                                                                                | 26.0                                                                                | 106.7                                                                               | 30.3                                                                                | 26.8                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.68                                                                                | 1.65                                                                                | 5.28                                                                                |
| Incremental Delay, d2             | 8.7                                                                               | 3.9                                                                               | 2.5                                                                               | 0.6                                                                               | 10.9                                                                              | 0.4                                                                               | 3.9                                                                               | 0.7                                                                                 | 0.0                                                                                 | 3.9                                                                                 | 0.3                                                                                 | 0.2                                                                                 |
| Delay (s)                         | 107.0                                                                             | 101.9                                                                             | 97.2                                                                              | 85.3                                                                              | 105.2                                                                             | 85.2                                                                              | 111.0                                                                             | 35.9                                                                                | 26.0                                                                                | 77.0                                                                                | 50.1                                                                                | 141.5                                                                               |
| Level of Service                  | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | D                                                                                   | C                                                                                   | E                                                                                   | D                                                                                   | F                                                                                   |
| Approach Delay (s)                |                                                                                   | 101.8                                                                             |                                                                                   |                                                                                   | 93.5                                                                              |                                                                                   |                                                                                   | 43.3                                                                                |                                                                                     |                                                                                     | 63.3                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 65.2                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 240.0                                                                             |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 64.0%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis

11: Ft Weaver Rd & Renton Rd

10/15/2014

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Volume (vph)                      | 391                                                                               | 5                                                                                 | 110                                                                               | 4                                                                                 | 12                                                                                | 10                                                                                | 198                                                                               | 2650                                                                               | 15                                                                                  | 67                                                                                  | 1176                                                                                | 235                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 6.0                                                                               | 5.0                                                                                | 6.0                                                                                 | 4.0                                                                                 | 5.0                                                                                 | 7.0                                                                                 |
| Lane Util. Factor                 | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                               | 1.00                                                                                | 1.00                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              | 0.91                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.83                                                                                | 1.00                                                                                | 1.00                                                                                | 0.97                                                                                |
| Flpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                               | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1681                                                                              | 1687                                                                              | 1434                                                                              |                                                                                   | 1841                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                               | 1311                                                                                | 1770                                                                                | 5085                                                                                | 1536                                                                                |
| Flt Permitted                     | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1681                                                                              | 1687                                                                              | 1434                                                                              |                                                                                   | 1841                                                                              | 1583                                                                              | 1770                                                                              | 5085                                                                               | 1311                                                                                | 1770                                                                                | 5085                                                                                | 1536                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 425                                                                               | 5                                                                                 | 120                                                                               | 4                                                                                 | 13                                                                                | 11                                                                                | 215                                                                               | 2880                                                                               | 16                                                                                  | 73                                                                                  | 1278                                                                                | 255                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 84                                                                                | 0                                                                                 | 0                                                                                 | 11                                                                                | 0                                                                                 | 0                                                                                  | 6                                                                                   | 0                                                                                   | 0                                                                                   | 113                                                                                 |
| Lane Group Flow (vph)             | 217                                                                               | 213                                                                               | 36                                                                                | 0                                                                                 | 17                                                                                | 0                                                                                 | 215                                                                               | 2880                                                                               | 10                                                                                  | 73                                                                                  | 1278                                                                                | 142                                                                                 |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 43                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 31                                                                                  |                                                                                     |                                                                                     | 2                                                                                   |
| Turn Type                         | Split                                                                             | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 4                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 3                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                  |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 39.3                                                                              | 39.3                                                                              | 39.3                                                                              |                                                                                   | 6.6                                                                               | 6.6                                                                               | 36.2                                                                              | 154.9                                                                              | 154.9                                                                               | 15.2                                                                                | 133.9                                                                               | 133.9                                                                               |
| Effective Green, g (s)            | 39.3                                                                              | 39.3                                                                              | 39.3                                                                              |                                                                                   | 6.6                                                                               | 8.6                                                                               | 36.2                                                                              | 156.9                                                                              | 155.9                                                                               | 17.2                                                                                | 135.9                                                                               | 133.9                                                                               |
| Actuated g/C Ratio                | 0.16                                                                              | 0.16                                                                              | 0.16                                                                              |                                                                                   | 0.03                                                                              | 0.04                                                                              | 0.15                                                                              | 0.65                                                                               | 0.65                                                                                | 0.07                                                                                | 0.57                                                                                | 0.56                                                                                |
| Clearance Time (s)                | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 7.0                                                                                | 7.0                                                                                 | 6.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Vehicle Extension (s)             | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 5.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 3.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lane Grp Cap (vph)                | 275                                                                               | 276                                                                               | 234                                                                               |                                                                                   | 50                                                                                | 56                                                                                | 266                                                                               | 3324                                                                               | 851                                                                                 | 126                                                                                 | 2879                                                                                | 856                                                                                 |
| v/s Ratio Prot                    | c0.13                                                                             | 0.13                                                                              |                                                                                   |                                                                                   | c0.01                                                                             |                                                                                   | c0.12                                                                             | c0.57                                                                              |                                                                                     | 0.04                                                                                | 0.25                                                                                |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                    | 0.01                                                                                |                                                                                     |                                                                                     | 0.09                                                                                |
| v/c Ratio                         | 0.79                                                                              | 0.77                                                                              | 0.16                                                                              |                                                                                   | 0.34                                                                              | 0.01                                                                              | 0.81                                                                              | 0.87                                                                               | 0.01                                                                                | 0.58                                                                                | 0.44                                                                                | 0.17                                                                                |
| Uniform Delay, d1                 | 96.4                                                                              | 96.1                                                                              | 86.1                                                                              |                                                                                   | 114.6                                                                             | 111.6                                                                             | 98.5                                                                              | 33.2                                                                               | 14.9                                                                                | 107.9                                                                               | 30.2                                                                                | 25.8                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.14                                                                              | 0.61                                                                               | 1.00                                                                                | 1.09                                                                                | 1.02                                                                                | 1.76                                                                                |
| Incremental Delay, d2             | 14.7                                                                              | 13.2                                                                              | 0.4                                                                               |                                                                                   | 4.0                                                                               | 0.1                                                                               | 8.4                                                                               | 1.4                                                                                | 0.0                                                                                 | 6.0                                                                                 | 0.5                                                                                 | 0.4                                                                                 |
| Delay (s)                         | 111.0                                                                             | 109.3                                                                             | 86.5                                                                              |                                                                                   | 118.6                                                                             | 111.6                                                                             | 120.7                                                                             | 21.8                                                                               | 14.9                                                                                | 123.1                                                                               | 31.3                                                                                | 45.8                                                                                |
| Level of Service                  | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 | C                                                                                  | B                                                                                   | F                                                                                   | C                                                                                   | D                                                                                   |
| Approach Delay (s)                |                                                                                   | 105.0                                                                             |                                                                                   |                                                                                   | 115.9                                                                             |                                                                                   |                                                                                   | 28.6                                                                               |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.84                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 240.0                                                                             |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 22.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 94.7%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

c Critical Lane Group

# HCM 2010 Signalized Intersection Summary

## 1: Kapolei Pkwy & Kualakai Pkwy

10/24/2014

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |  |  |  |   |   |
| Volume (veh/h)               | 218                                                                               | 442                                                                               | 356                                                                               | 253                                                                               | 377                                                                               | 334                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 237                                                                               | 480                                                                               | 387                                                                               | 275                                                                               | 410                                                                               | 363                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 3                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 368                                                                               | 2677                                                                              | 1480                                                                              | 1415                                                                              | 746                                                                               | 902                                                                               |   |   |
| Arrive On Green              | 0.11                                                                              | 0.53                                                                              | 0.29                                                                              | 0.29                                                                              | 0.22                                                                              | 0.22                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 5253                                                                              | 5253                                                                              | 2787                                                                              | 3442                                                                              | 2787                                                                              |   |   |
| Grp Volume(v), veh/h         | 237                                                                               | 480                                                                               | 387                                                                               | 275                                                                               | 410                                                                               | 363                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1695                                                                              | 1393                                                                              | 1721                                                                              | 1393                                                                              |   |   |
| Q Serve(g_s), s              | 3.1                                                                               | 2.3                                                                               | 2.7                                                                               | 2.5                                                                               | 4.9                                                                               | 4.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 3.1                                                                               | 2.3                                                                               | 2.7                                                                               | 2.5                                                                               | 4.9                                                                               | 4.7                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 368                                                                               | 2677                                                                              | 1480                                                                              | 1415                                                                              | 746                                                                               | 902                                                                               |   |   |
| V/C Ratio(X)                 | 0.64                                                                              | 0.18                                                                              | 0.26                                                                              | 0.19                                                                              | 0.55                                                                              | 0.40                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 516                                                                               | 6639                                                                              | 5224                                                                              | 3467                                                                              | 3094                                                                              | 2803                                                                              |   |   |
| 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     | 20.0                                                                              | 5.8                                                                               | 12.7                                                                              | 6.3                                                                               | 16.3                                                                              | 12.3                                                                              |   |   |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.6                                                                               | 0.3                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 1.1                                                                               | 1.3                                                                               | 1.4                                                                               | 2.4                                                                               | 3.9                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 21.9                                                                              | 5.8                                                                               | 12.8                                                                              | 6.3                                                                               | 16.9                                                                              | 12.6                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 717                                                                               | 662                                                                               |                                                                                   | 773                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 11.1                                                                              | 10.1                                                                              |                                                                                   | 14.9                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 30.6                                                                              |                                                                                   | 16.1                                                                              | 11.0                                                                              | 19.6                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 61.0                                                                              |                                                                                   | 42.0                                                                              | 7.0                                                                               | 48.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 4.3                                                                               |                                                                                   | 6.9                                                                               | 5.1                                                                               | 4.7                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 9.1                                                                               |                                                                                   | 3.2                                                                               | 0.2                                                                               | 8.9                                                                               |   |   |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

### Notes

User approved changes to right turn type.

# HCM 2010 Signalized Intersection Summary 2: Kapolei Pkwy & Renton Rd

10/24/2014

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 57                                                                                | 99                                                                                | 56                                                                                | 158                                                                               | 62                                                                                | 166                                                                               | 32                                                                                 | 382                                                                                 | 110                                                                                 | 184                                                                                 | 585                                                                                 | 48                                                                                  |
| Number                       | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 62                                                                                | 108                                                                               | 40                                                                                | 172                                                                               | 67                                                                                | 32                                                                                | 35                                                                                 | 415                                                                                 | 66                                                                                  | 200                                                                                 | 636                                                                                 | 44                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 3                                                                                   | 0                                                                                   | 1                                                                                   | 3                                                                                   | 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, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 437                                                                               | 348                                                                               | 129                                                                               | 375                                                                               | 500                                                                               | 425                                                                               | 53                                                                                 | 1207                                                                                | 188                                                                                 | 258                                                                                 | 1883                                                                                | 129                                                                                 |
| Arrive On Green              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.03                                                                               | 0.27                                                                                | 0.27                                                                                | 0.15                                                                                | 0.39                                                                                | 0.39                                                                                |
| Sat Flow, veh/h              | 1291                                                                              | 1297                                                                              | 481                                                                               | 1235                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 4441                                                                                | 690                                                                                 | 1774                                                                                | 4860                                                                                | 334                                                                                 |
| Grp Volume(v), veh/h         | 62                                                                                | 0                                                                                 | 148                                                                               | 172                                                                               | 67                                                                                | 32                                                                                | 35                                                                                 | 315                                                                                 | 166                                                                                 | 200                                                                                 | 442                                                                                 | 238                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1291                                                                              | 0                                                                                 | 1778                                                                              | 1235                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1695                                                                                | 1741                                                                                | 1774                                                                                | 1695                                                                                | 1804                                                                                |
| Q Serve(g_s), s              | 2.2                                                                               | 0.0                                                                               | 3.8                                                                               | 7.4                                                                               | 1.6                                                                               | 0.9                                                                               | 1.1                                                                                | 4.3                                                                                 | 4.4                                                                                 | 6.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Cycle Q Clear(g_c), s        | 3.8                                                                               | 0.0                                                                               | 3.8                                                                               | 11.2                                                                              | 1.6                                                                               | 0.9                                                                               | 1.1                                                                                | 4.3                                                                                 | 4.4                                                                                 | 6.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.27                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.40                                                                                | 1.00                                                                                |                                                                                     | 0.19                                                                                |
| Lane Grp Cap(c), veh/h       | 437                                                                               | 0                                                                                 | 477                                                                               | 375                                                                               | 500                                                                               | 425                                                                               | 53                                                                                 | 921                                                                                 | 473                                                                                 | 258                                                                                 | 1314                                                                                | 699                                                                                 |
| V/C Ratio(X)                 | 0.14                                                                              | 0.00                                                                              | 0.31                                                                              | 0.46                                                                              | 0.13                                                                              | 0.08                                                                              | 0.66                                                                               | 0.34                                                                                | 0.35                                                                                | 0.77                                                                                | 0.34                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 857                                                                               | 0                                                                                 | 1055                                                                              | 777                                                                               | 1106                                                                              | 940                                                                               | 743                                                                                | 2308                                                                                | 1185                                                                                | 743                                                                                 | 2308                                                                                | 1228                                                                                |
| 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                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.3                                                                              | 0.0                                                                               | 16.7                                                                              | 21.2                                                                              | 15.9                                                                              | 15.6                                                                              | 27.5                                                                               | 16.7                                                                                | 16.8                                                                                | 23.6                                                                                | 12.4                                                                                | 12.4                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 0.4                                                                               | 0.9                                                                               | 0.1                                                                               | 0.1                                                                               | 13.2                                                                               | 0.2                                                                                 | 0.4                                                                                 | 4.9                                                                                 | 0.2                                                                                 | 0.3                                                                                 |
| 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     | 0.8                                                                               | 0.0                                                                               | 1.9                                                                               | 2.6                                                                               | 0.8                                                                               | 0.4                                                                               | 0.7                                                                                | 2.0                                                                                 | 2.2                                                                                 | 3.4                                                                                 | 2.5                                                                                 | 2.7                                                                                 |
| LnGrp Delay(d),s/veh         | 17.5                                                                              | 0.0                                                                               | 17.1                                                                              | 22.1                                                                              | 16.0                                                                              | 15.7                                                                              | 40.7                                                                               | 17.0                                                                                | 17.2                                                                                | 28.5                                                                                | 12.5                                                                                | 12.7                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 210                                                                               |                                                                                   |                                                                                   |                                                                                   | 271                                                                               |                                                                                   |                                                                                    |                                                                                     | 516                                                                                 |                                                                                     | 880                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 17.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.8                                                                              |                                                                                   |                                                                                    |                                                                                     | 18.7                                                                                |                                                                                     | 16.2                                                                                |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     | B                                                                                   |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.3                                                                              | 21.6                                                                              |                                                                                   |                                                                                   | 21.4                                                                              | 7.7                                                                               | 28.2                                                                               | 21.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.0                                                                              | 39.0                                                                              |                                                                                   |                                                                                   | 34.0                                                                              | 24.0                                                                              | 39.0                                                                               | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.2                                                                               | 6.4                                                                               |                                                                                   |                                                                                   | 13.2                                                                              | 3.1                                                                               | 7.3                                                                                | 5.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 9.2                                                                               |                                                                                   |                                                                                   | 2.2                                                                               | 0.1                                                                               | 9.1                                                                                | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection

Int Delay, s/veh 8.4

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 2    | 3    | 135  | 2    | 6    | 193  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| 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, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 2    | 3    | 147  | 2    | 7    | 210  |

| Major/Minor          | Major1 |   | Major2 |   | Minor1 |       |
|----------------------|--------|---|--------|---|--------|-------|
| Conflicting Flow All | 0      | 0 | 5      | 0 | 300    | 4     |
| Stage 1              | -      | - | -      | - | 4      | -     |
| Stage 2              | -      | - | -      | - | 296    | -     |
| Critical Hdwy        | -      | - | 4.12   | - | 6.42   | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | - | 5.42   | -     |
| Critical Hdwy Stg 2  | -      | - | -      | - | 5.42   | -     |
| Follow-up Hdwy       | -      | - | 2.218  | - | 3.518  | 3.318 |
| Pot Cap-1 Maneuver   | -      | - | 1616   | - | 691    | 1080  |
| Stage 1              | -      | - | -      | - | 1019   | -     |
| Stage 2              | -      | - | -      | - | 755    | -     |
| Platoon blocked, %   | -      | - | -      | - | -      | -     |
| Mov Cap-1 Maneuver   | -      | - | 1616   | - | 628    | 1080  |
| Mov Cap-2 Maneuver   | -      | - | -      | - | 628    | -     |
| Stage 1              | -      | - | -      | - | 1019   | -     |
| Stage 2              | -      | - | -      | - | 686    | -     |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 7.3 | 9.3 |
| HCM LOS              | A  |     |     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 1057  | -   | -   | 1616  | -   |
| HCM Lane V/C Ratio    | 0.205 | -   | -   | 0.091 | -   |
| HCM Control Delay (s) | 9.3   | -   | -   | 7.5   | 0   |
| HCM Lane LOS          | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.8   | -   | -   | 0.3   | -   |

HCM 2010 TWSC  
4: Phillipine Sea & Roosevelt Ave

10/13/2014

Intersection

Int Delay, s/veh 3.2

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 172  | 583  | 0    | 0    | 331  | 17   | 0    | 0    | 0    | 14   | 0    | 123  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 187  | 634  | 0    | 0    | 360  | 18   | 0    | 0    | 0    | 15   | 0    | 134  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 378    | 0 | 0 | 634    | 0 | 0 | 1444   | 1386  | 634   | 1377   | 1377  | 369   |
| Stage 1              | -      | - | - | -      | - | - | 1008   | 1008  | -     | 369    | 369   | -     |
| Stage 2              | -      | - | - | -      | - | - | 436    | 378   | -     | 1008   | 1008  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1180   | - | - | 949    | - | - | 110    | 143   | 479   | 122    | 145   | 677   |
| Stage 1              | -      | - | - | -      | - | - | 290    | 318   | -     | 651    | 621   | -     |
| Stage 2              | -      | - | - | -      | - | - | 599    | 615   | -     | 290    | 318   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1180   | - | - | 949    | - | - | 72     | 108   | 479   | 99     | 109   | 677   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 72     | 108   | -     | 99     | 109   | -     |
| Stage 1              | -      | - | - | -      | - | - | 219    | 240   | -     | 492    | 621   | -     |
| Stage 2              | -      | - | - | -      | - | - | 481    | 615   | -     | 219    | 240   | -     |

| Approach             | EB | WB | NB | SB |
|----------------------|----|----|----|----|
| HCM Control Delay, s | 2  | 0  | 0  | 18 |
| HCM LOS              |    |    | A  | C  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-----|-----|-----|-------|
| Capacity (veh/h)      | -     | 1180  | -   | -   | 949 | -   | -   | 424   |
| HCM Lane V/C Ratio    | -     | 0.158 | -   | -   | -   | -   | -   | 0.351 |
| HCM Control Delay (s) | 0     | 8.6   | 0   | -   | 0   | -   | -   | 18    |
| HCM Lane LOS          | A     | A     | A   | -   | A   | -   | -   | C     |
| HCM 95th %tile Q(veh) | -     | 0.6   | -   | -   | 0   | -   | -   | 1.6   |

Intersection

Int Delay, s/veh 0.6

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 624  | 13   | 11   | 345  | 9    | 19   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | 50   | -    | 0    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 678  | 14   | 12   | 375  | 10   | 21   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 692    |
| Stage 1              | -      | -      | 685    |
| Stage 2              | -      | -      | 399    |
| Critical Hdwy        | -      | 4.12   | 6.42   |
| Critical Hdwy Stg 1  | -      | -      | 5.42   |
| Critical Hdwy Stg 2  | -      | -      | 5.42   |
| Follow-up Hdwy       | -      | 2.218  | 3.518  |
| Pot Cap-1 Maneuver   | -      | 903    | 240    |
| Stage 1              | -      | -      | 500    |
| Stage 2              | -      | -      | 678    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | 903    | 237    |
| Mov Cap-2 Maneuver   | -      | -      | 237    |
| Stage 1              | -      | -      | 500    |
| Stage 2              | -      | -      | 669    |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.3 | 16.3 |
| HCM LOS              |    |     | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 348   | -   | -   | 903   | -   |
| HCM Lane V/C Ratio    | 0.087 | -   | -   | 0.013 | -   |
| HCM Control Delay (s) | 16.3  | -   | -   | 9     | -   |
| HCM Lane LOS          | C     | -   | -   | A     | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | -   | 0     | -   |

| Intersection     |   |  |  |  |  |  |  |  |  |  |  |  |
|------------------|---|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 0 |  |  |  |  |  |  |  |  |  |  |  |

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 1    | 617  | 0    | 1    | 352  | 1    | 0    | 0    | 2    | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1    | 671  | 0    | 1    | 383  | 1    | 0    | 0    | 2    | 0    | 0    | 0    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 384    | 0 | 0 | 671    | 0 | 0 | 1058   | 1059  | 671   | 1059   | 1058  | 383   |
| Stage 1              | -      | - | - | -      | - | - | 673    | 673   | -     | 385    | 385   | -     |
| Stage 2              | -      | - | - | -      | - | - | 385    | 386   | -     | 674    | 673   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1174   | - | - | 919    | - | - | 203    | 224   | 456   | 202    | 225   | 664   |
| Stage 1              | -      | - | - | -      | - | - | 445    | 454   | -     | 638    | 611   | -     |
| Stage 2              | -      | - | - | -      | - | - | 638    | 610   | -     | 444    | 454   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1174   | - | - | 919    | - | - | 203    | 224   | 456   | 201    | 225   | 664   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 203    | 224   | -     | 201    | 225   | -     |
| Stage 1              | -      | - | - | -      | - | - | 445    | 454   | -     | 637    | 610   | -     |
| Stage 2              | -      | - | - | -      | - | - | 637    | 609   | -     | 441    | 454   | -     |

| Approach             | EB | WB | NB   | SB |
|----------------------|----|----|------|----|
| HCM Control Delay, s | 0  | 0  | 12.9 | 0  |
| HCM LOS              |    |    | B    | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 456   | 1174  | -   | -   | 919   | -   | -   | -     |
| HCM Lane V/C Ratio    | 0.005 | 0.001 | -   | -   | 0.001 | -   | -   | -     |
| HCM Control Delay (s) | 12.9  | 8.1   | 0   | -   | 8.9   | 0   | -   | 0     |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | 0     | -   | -   | 0     | -   | -   | -     |

HCM 2010 TWSC  
7: Geiger Rd & Honouliuli Drwy 1

10/13/2014

Intersection

Int Delay, s/veh 0.2

| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 644  | 354  | 2    | 10   | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| 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, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 700  | 385  | 2    | 11   | 2    |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 387    | 0      | 1086   |
| Stage 1              | -      | -      | 386    |
| Stage 2              | -      | -      | 700    |
| Critical Hdwy        | 4.12   | -      | 6.42   |
| Critical Hdwy Stg 1  | -      | -      | 5.42   |
| Critical Hdwy Stg 2  | -      | -      | 5.42   |
| Follow-up Hdwy       | 2.218  | -      | 3.518  |
| Pot Cap-1 Maneuver   | 1171   | -      | 239    |
| Stage 1              | -      | -      | 687    |
| Stage 2              | -      | -      | 493    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 1171   | -      | 239    |
| Mov Cap-2 Maneuver   | -      | -      | 239    |
| Stage 1              | -      | -      | 687    |
| Stage 2              | -      | -      | 493    |

| Approach             | EB | WB | SB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 19.2 |
| HCM LOS              |    |    | C    |

| Minor Lane/Major Mvmt | EBL  | EBT | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1171 | -   | -   | -   | 267   |
| HCM Lane V/C Ratio    | -    | -   | -   | -   | 0.049 |
| HCM Control Delay (s) | 0    | -   | -   | -   | 19.2  |
| HCM Lane LOS          | A    | -   | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -   | 0.2   |

| Intersection             |        |       |      |        |      |      |        |       |       |        |       |       |
|--------------------------|--------|-------|------|--------|------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh         | 0.7    |       |      |        |      |      |        |       |       |        |       |       |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT  | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Vol, veh/h               | 10     | 628   | 0    | 0      | 336  | 19   | 0      | 0     | 0     | 19     | 0     | 12    |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0    | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control             | Free   | Free  | Free | Free   | Free | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized           | -      | -     | None | -      | -    | None | -      | -     | None  | -      | -     | None  |
| Storage Length           | -      | -     | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                 | -      | 0     | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor         | 92     | 92    | 92   | 92     | 92   | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %        | 2      | 2     | 2    | 2      | 2    | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                | 11     | 683   | 0    | 0      | 365  | 21   | 0      | 0     | 0     | 21     | 0     | 13    |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Major/Minor              | Major1 |       |      | Major2 |      |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All     | 386    | 0     | 0    | 683    | 0    | 0    | 1086   | 1090  | 683   | 1080   | 1080  | 376   |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 704    | 704   | -     | 376    | 376   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 382    | 386   | -     | 704    | 704   | -     |
| Critical Hdwy            | 4.12   | -     | -    | 4.12   | -    | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy           | 2.218  | -     | -    | 2.218  | -    | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver       | 1172   | -     | -    | 910    | -    | -    | 194    | 215   | 449   | 196    | 218   | 670   |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 428    | 440   | -     | 645    | 616   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 640    | 610   | -     | 428    | 440   | -     |
| Platoon blocked, %       | -      | -     | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver       | 1172   | -     | -    | 910    | -    | -    | 188    | 212   | 449   | 194    | 215   | 670   |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -    | -    | 188    | 212   | -     | 194    | 215   | -     |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 422    | 433   | -     | 635    | 616   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 628    | 610   | -     | 422    | 433   | -     |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Approach                 | EB     |       |      | WB     |      |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s     | 0.1    |       |      | 0      |      |      | 0      |       |       | 20.4   |       |       |
| HCM LOS                  |        |       |      |        |      |      | A      |       |       | C      |       |       |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL  | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)         | -      | 1172  | -    | -      | 910  | -    | -      | 268   |       |        |       |       |
| HCM Lane V/C Ratio       | -      | 0.009 | -    | -      | -    | -    | -      | 0.126 |       |        |       |       |
| HCM Control Delay (s)    | 0      | 8.1   | 0    | -      | 0    | -    | -      | 20.4  |       |        |       |       |
| HCM Lane LOS             | A      | A     | A    | -      | A    | -    | -      | C     |       |        |       |       |
| HCM 95th %tile Q(veh)    | -      | 0     | -    | -      | 0    | -    | -      | 0.4   |       |        |       |       |

# HCM 2010 Signalized Intersection Summary 9: Kapolei Pkwy & Geiger Rd

10/27/2014

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 45                                                                                | 228                                                                               | 395                                                                               | 121                                                                               | 142                                                                               | 232                                                                               | 196                                                                                | 369                                                                                 | 92                                                                                  | 153                                                                                 | 492                                                                                 | 25                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 49                                                                                | 248                                                                               | 191                                                                               | 132                                                                               | 154                                                                               | 59                                                                                | 213                                                                                | 401                                                                                 | 18                                                                                  | 166                                                                                 | 535                                                                                 | 4                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 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                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 63                                                                                | 391                                                                               | 290                                                                               | 169                                                                               | 487                                                                               | 414                                                                               | 261                                                                                | 986                                                                                 | 441                                                                                 | 210                                                                                 | 884                                                                                 | 396                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.20                                                                              | 0.20                                                                              | 0.10                                                                              | 0.26                                                                              | 0.26                                                                              | 0.15                                                                               | 0.28                                                                                | 0.28                                                                                | 0.12                                                                                | 0.25                                                                                | 0.25                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 1940                                                                              | 1438                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 3539                                                                                | 1583                                                                                | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 49                                                                                | 225                                                                               | 214                                                                               | 132                                                                               | 154                                                                               | 59                                                                                | 213                                                                                | 401                                                                                 | 18                                                                                  | 166                                                                                 | 535                                                                                 | 4                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1609                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1583                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 2.1                                                                               | 9.1                                                                               | 9.6                                                                               | 5.7                                                                               | 5.2                                                                               | 2.2                                                                               | 9.1                                                                                | 7.2                                                                                 | 0.7                                                                                 | 7.1                                                                                 | 10.5                                                                                | 0.1                                                                                 |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 9.1                                                                               | 9.6                                                                               | 5.7                                                                               | 5.2                                                                               | 2.2                                                                               | 9.1                                                                                | 7.2                                                                                 | 0.7                                                                                 | 7.1                                                                                 | 10.5                                                                                | 0.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.89                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 63                                                                                | 356                                                                               | 324                                                                               | 169                                                                               | 487                                                                               | 414                                                                               | 261                                                                                | 986                                                                                 | 441                                                                                 | 210                                                                                 | 884                                                                                 | 396                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.63                                                                              | 0.66                                                                              | 0.78                                                                              | 0.32                                                                              | 0.14                                                                              | 0.81                                                                               | 0.41                                                                                | 0.04                                                                                | 0.79                                                                                | 0.60                                                                                | 0.01                                                                                |
| Avail Cap(c_a), veh/h        | 430                                                                               | 993                                                                               | 902                                                                               | 430                                                                               | 1045                                                                              | 888                                                                               | 656                                                                                | 1760                                                                                | 787                                                                                 | 656                                                                                 | 1760                                                                                | 787                                                                                 |
| 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     | 37.5                                                                              | 28.7                                                                              | 28.8                                                                              | 34.7                                                                              | 23.3                                                                              | 22.2                                                                              | 32.4                                                                               | 23.0                                                                                | 20.6                                                                                | 33.6                                                                                | 26.0                                                                                | 22.1                                                                                |
| Incr Delay (d2), s/veh       | 18.8                                                                              | 1.9                                                                               | 2.3                                                                               | 7.5                                                                               | 0.4                                                                               | 0.2                                                                               | 6.1                                                                                | 0.3                                                                                 | 0.0                                                                                 | 6.5                                                                                 | 0.7                                                                                 | 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     | 1.4                                                                               | 4.6                                                                               | 4.5                                                                               | 3.1                                                                               | 2.7                                                                               | 1.0                                                                               | 4.9                                                                                | 3.5                                                                                 | 0.3                                                                                 | 3.9                                                                                 | 5.2                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh         | 56.4                                                                              | 30.5                                                                              | 31.1                                                                              | 42.2                                                                              | 23.7                                                                              | 22.4                                                                              | 38.5                                                                               | 23.3                                                                                | 20.7                                                                                | 40.1                                                                                | 26.7                                                                                | 22.1                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 488                                                                               |                                                                                   |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                    |                                                                                     | 632                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 33.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 28.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| 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     | 15.3                                                                              | 27.9                                                                              | 13.5                                                                              | 21.8                                                                              | 17.6                                                                              | 25.6                                                                              | 8.8                                                                                | 26.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 29.0                                                                              | 39.0                                                                              | 19.0                                                                              | 44.0                                                                              | 29.0                                                                              | 39.0                                                                              | 19.0                                                                               | 44.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.1                                                                               | 9.2                                                                               | 7.7                                                                               | 11.6                                                                              | 11.1                                                                              | 12.5                                                                              | 4.1                                                                                | 7.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.4                                                                               | 7.4                                                                               | 0.2                                                                               | 4.2                                                                               | 0.5                                                                               | 7.1                                                                               | 0.1                                                                                | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 30.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis 10: Ft Weaver Rd & Geiger Rd/Iroquois Rd

10/15/2014

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)                      | 198                                                                               | 206                                                                               | 153                                                                               | 10                                                                                | 182                                                                               | 122                                                                               | 135                                                                                | 817                                                                                 | 10                                                                                  | 341                                                                                 | 1493                                                                                | 207                                                                                 |
| 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                                                                                 | 6.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 6.0                                                                                 |
| Lane Util. Factor                 | 0.91                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.88                                                                              | 0.97                                                                               | 0.91                                                                                | 1.00                                                                                | 0.97                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                               | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 0.99                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1610                                                                              | 3349                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 2787                                                                              | 3433                                                                               | 5085                                                                                | 1583                                                                                | 3433                                                                                | 5085                                                                                | 1583                                                                                |
| Flt Permitted                     | 0.95                                                                              | 0.99                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1610                                                                              | 3349                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 2787                                                                              | 3433                                                                               | 5085                                                                                | 1583                                                                                | 3433                                                                                | 5085                                                                                | 1583                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 215                                                                               | 224                                                                               | 166                                                                               | 11                                                                                | 198                                                                               | 133                                                                               | 147                                                                                | 888                                                                                 | 11                                                                                  | 371                                                                                 | 1623                                                                                | 225                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 63                                                                                | 0                                                                                 | 0                                                                                 | 111                                                                               | 0                                                                                  | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   | 65                                                                                  |
| Lane Group Flow (vph)             | 142                                                                               | 297                                                                               | 103                                                                               | 11                                                                                | 198                                                                               | 22                                                                                | 147                                                                                | 888                                                                                 | 6                                                                                   | 371                                                                                 | 1623                                                                                | 160                                                                                 |
| Turn Type                         | Split                                                                             | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 3                                                                                 | 3                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 30.8                                                                              | 30.8                                                                              | 30.8                                                                              | 30.7                                                                              | 30.7                                                                              | 30.7                                                                              | 15.6                                                                               | 122.9                                                                               | 122.9                                                                               | 30.6                                                                                | 137.9                                                                               | 137.9                                                                               |
| Effective Green, g (s)            | 32.8                                                                              | 32.8                                                                              | 32.8                                                                              | 32.7                                                                              | 32.7                                                                              | 32.7                                                                              | 17.6                                                                               | 125.9                                                                               | 123.9                                                                               | 32.6                                                                                | 140.9                                                                               | 138.9                                                                               |
| Actuated g/C Ratio                | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.14                                                                              | 0.07                                                                               | 0.52                                                                                | 0.52                                                                                | 0.14                                                                                | 0.59                                                                                | 0.58                                                                                |
| Clearance Time (s)                | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 6.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Vehicle Extension (s)             | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 3.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 3.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Lane Grp Cap (vph)                | 220                                                                               | 457                                                                               | 216                                                                               | 241                                                                               | 253                                                                               | 379                                                                               | 251                                                                                | 2667                                                                                | 817                                                                                 | 466                                                                                 | 2985                                                                                | 916                                                                                 |
| v/s Ratio Prot                    | 0.09                                                                              | c0.09                                                                             |                                                                                   | 0.01                                                                              | c0.11                                                                             |                                                                                   | 0.04                                                                               | 0.17                                                                                |                                                                                     | c0.11                                                                               | c0.32                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                    |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     | 0.10                                                                                |
| v/c Ratio                         | 0.65                                                                              | 0.65                                                                              | 0.48                                                                              | 0.05                                                                              | 0.78                                                                              | 0.06                                                                              | 0.59                                                                               | 0.33                                                                                | 0.01                                                                                | 0.80                                                                                | 0.54                                                                                | 0.17                                                                                |
| Uniform Delay, d1                 | 98.1                                                                              | 98.2                                                                              | 95.7                                                                              | 90.1                                                                              | 100.2                                                                             | 90.2                                                                              | 107.7                                                                              | 32.9                                                                                | 28.2                                                                                | 100.5                                                                               | 30.1                                                                                | 23.7                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.10                                                                                | 0.95                                                                                | 1.35                                                                                |
| Incremental Delay, d2             | 8.6                                                                               | 4.3                                                                               | 3.4                                                                               | 0.2                                                                               | 16.6                                                                              | 0.1                                                                               | 3.5                                                                                | 0.3                                                                                 | 0.0                                                                                 | 9.0                                                                                 | 0.7                                                                                 | 0.4                                                                                 |
| Delay (s)                         | 106.7                                                                             | 102.5                                                                             | 99.1                                                                              | 90.3                                                                              | 116.8                                                                             | 90.4                                                                              | 111.1                                                                              | 33.2                                                                                | 28.2                                                                                | 119.0                                                                               | 29.3                                                                                | 32.3                                                                                |
| Level of Service                  | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                  | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   | 102.5                                                                             |                                                                                   |                                                                                   | 105.7                                                                             |                                                                                   |                                                                                    | 44.1                                                                                |                                                                                     |                                                                                     | 44.6                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 57.8                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                          |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 240.0                                                                             |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                               |                                                                                     |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 66.0%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                               |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis 11: Ft Weaver Rd & Renton Rd

10/15/2014

| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT                       | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|-----------------------------------|-------|-------|-------|-------|---------------------------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations               |       |       |       |       |                           |       |       |       |       |       |       |       |
| Volume (vph)                      | 355   | 36    | 97    | 34    | 28                        | 22    | 115   | 1410  | 54    | 68    | 2628  | 298   |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900                      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 5.0   | 5.0   | 5.0   |       | 6.0                       | 4.0   | 6.0   | 5.0   | 6.0   | 4.0   | 5.0   | 7.0   |
| Lane Util. Factor                 | 0.95  | 0.95  | 1.00  |       | 1.00                      | 1.00  | 1.00  | 0.91  | 1.00  | 1.00  | 0.91  | 1.00  |
| Frpb, ped/bikes                   | 1.00  | 1.00  | 0.91  |       | 1.00                      | 1.00  | 1.00  | 1.00  | 0.83  | 1.00  | 1.00  | 0.97  |
| Flpb, ped/bikes                   | 1.00  | 1.00  | 1.00  |       | 1.00                      | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  |       | 1.00                      | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 0.96  | 1.00  |       | 0.97                      | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  |
| Satd. Flow (prot)                 | 1681  | 1700  | 1434  |       | 1813                      | 1583  | 1770  | 5085  | 1311  | 1770  | 5085  | 1536  |
| Flt Permitted                     | 0.95  | 0.96  | 1.00  |       | 0.97                      | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  |
| Satd. Flow (perm)                 | 1681  | 1700  | 1434  |       | 1813                      | 1583  | 1770  | 5085  | 1311  | 1770  | 5085  | 1536  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92                      | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 386   | 39    | 105   | 37    | 30                        | 24    | 125   | 1533  | 59    | 74    | 2857  | 324   |
| RTOR Reduction (vph)              | 0     | 0     | 84    | 0     | 0                         | 22    | 0     | 0     | 22    | 0     | 0     | 136   |
| Lane Group Flow (vph)             | 212   | 213   | 21    | 0     | 67                        | 2     | 125   | 1533  | 37    | 74    | 2857  | 188   |
| Confl. Peds. (#/hr)               |       |       | 43    |       |                           |       |       |       | 31    |       |       | 2     |
| Turn Type                         | Split | NA    | Perm  | Split | NA                        | Perm  | Prot  | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases                  | 4     | 4     |       | 3     | 3                         |       | 5     | 2     |       | 1     | 6     |       |
| Permitted Phases                  |       |       | 4     |       |                           | 3     |       |       | 2     |       |       | 6     |
| Actuated Green, G (s)             | 38.3  | 38.3  | 38.3  |       | 14.2                      | 14.2  | 24.2  | 148.4 | 148.4 | 15.1  | 139.3 | 139.3 |
| Effective Green, g (s)            | 38.3  | 38.3  | 38.3  |       | 14.2                      | 16.2  | 24.2  | 150.4 | 149.4 | 17.1  | 141.3 | 139.3 |
| Actuated g/C Ratio                | 0.16  | 0.16  | 0.16  |       | 0.06                      | 0.07  | 0.10  | 0.63  | 0.62  | 0.07  | 0.59  | 0.58  |
| Clearance Time (s)                | 5.0   | 5.0   | 5.0   |       | 6.0                       | 6.0   | 6.0   | 7.0   | 7.0   | 6.0   | 7.0   | 7.0   |
| Vehicle Extension (s)             | 4.0   | 4.0   | 4.0   |       | 3.0                       | 3.0   | 5.0   | 6.0   | 6.0   | 3.0   | 6.0   | 6.0   |
| Lane Grp Cap (vph)                | 268   | 271   | 228   |       | 107                       | 106   | 178   | 3186  | 816   | 126   | 2993  | 891   |
| v/s Ratio Prot                    | c0.13 | 0.13  |       |       | c0.04                     |       | c0.07 | 0.30  |       | 0.04  | c0.56 |       |
| v/s Ratio Perm                    |       |       | 0.01  |       |                           | 0.00  |       |       | 0.03  |       |       | 0.12  |
| v/c Ratio                         | 0.79  | 0.79  | 0.09  |       | 0.63                      | 0.02  | 0.70  | 0.48  | 0.05  | 0.59  | 0.95  | 0.21  |
| Uniform Delay, d1                 | 97.0  | 96.9  | 86.0  |       | 110.3                     | 104.5 | 104.4 | 23.9  | 17.6  | 108.0 | 46.3  | 24.1  |
| Progression Factor                | 1.00  | 1.00  | 1.00  |       | 1.00                      | 1.00  | 0.90  | 1.19  | 2.27  | 0.97  | 0.99  | 1.41  |
| Incremental Delay, d2             | 15.4  | 14.7  | 0.2   |       | 10.9                      | 0.1   | 6.0   | 0.2   | 0.0   | 6.8   | 8.8   | 0.5   |
| Delay (s)                         | 112.4 | 111.6 | 86.3  |       | 121.2                     | 104.5 | 100.3 | 28.7  | 40.0  | 111.9 | 54.6  | 34.6  |
| Level of Service                  | F     | F     | F     |       | F                         | F     | F     | C     | D     | F     | D     | C     |
| Approach Delay (s)                |       | 106.9 |       |       | 116.8                     |       |       | 34.3  |       |       | 53.9  |       |
| Approach LOS                      |       | F     |       |       | F                         |       |       | C     |       |       | D     |       |
| <b>Intersection Summary</b>       |       |       |       |       |                           |       |       |       |       |       |       |       |
| HCM 2000 Control Delay            |       |       | 53.9  |       | HCM 2000 Level of Service |       |       |       |       | D     |       |       |
| HCM 2000 Volume to Capacity ratio |       |       | 0.88  |       |                           |       |       |       |       |       |       |       |
| Actuated Cycle Length (s)         |       |       | 240.0 |       | Sum of lost time (s)      |       |       |       |       | 22.0  |       |       |
| Intersection Capacity Utilization |       |       | 98.1% |       | ICU Level of Service      |       |       |       |       | F     |       |       |
| Analysis Period (min)             |       |       | 15    |       |                           |       |       |       |       |       |       |       |
| c Critical Lane Group             |       |       |       |       |                           |       |       |       |       |       |       |       |

# HCM 2010 Signalized Intersection Summary

## 1: Kapolei Pkwy & Kualakai Pkwy

11/17/2014

|                                           |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                  | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                       |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Volume (veh/h)                            | 625                                                                               | 515                                                                               | 5                                                                                 | 120                                                                               | 705                                                                               | 475                                                                               | 5                                                                                 | 85                                                                                 | 15                                                                                  | 395                                                                                 | 120                                                                                 | 430                                                                                 |
| Number                                    | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                 | 2                                                                                  | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                                |                                                                                     | 0.99                                                                                |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                      | 679                                                                               | 560                                                                               | 5                                                                                 | 130                                                                               | 766                                                                               | 516                                                                               | 5                                                                                 | 92                                                                                 | 3                                                                                   | 429                                                                                 | 130                                                                                 | 278                                                                                 |
| Adj No. of Lanes                          | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   | 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, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                | 809                                                                               | 2293                                                                              | 20                                                                                | 215                                                                               | 1365                                                                              | 1174                                                                              | 9                                                                                 | 317                                                                                | 10                                                                                  | 526                                                                                 | 844                                                                                 | 1316                                                                                |
| Arrive On Green                           | 0.24                                                                              | 0.44                                                                              | 0.44                                                                              | 0.06                                                                              | 0.27                                                                              | 0.27                                                                              | 0.01                                                                              | 0.09                                                                               | 0.09                                                                                | 0.15                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h                           | 3442                                                                              | 5198                                                                              | 46                                                                                | 3442                                                                              | 5085                                                                              | 2787                                                                              | 1774                                                                              | 3499                                                                               | 114                                                                                 | 3442                                                                                | 3539                                                                                | 2773                                                                                |
| Grp Volume(v), veh/h                      | 679                                                                               | 365                                                                               | 200                                                                               | 130                                                                               | 766                                                                               | 516                                                                               | 5                                                                                 | 46                                                                                 | 49                                                                                  | 429                                                                                 | 130                                                                                 | 278                                                                                 |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1695                                                                              | 1855                                                                              | 1721                                                                              | 1695                                                                              | 1393                                                                              | 1774                                                                              | 1770                                                                               | 1843                                                                                | 1721                                                                                | 1770                                                                                | 1386                                                                                |
| Q Serve(g_s), s                           | 17.8                                                                              | 6.4                                                                               | 6.4                                                                               | 3.5                                                                               | 12.3                                                                              | 12.5                                                                              | 0.3                                                                               | 2.3                                                                                | 2.3                                                                                 | 11.4                                                                                | 2.8                                                                                 | 5.6                                                                                 |
| Cycle Q Clear(g_c), s                     | 17.8                                                                              | 6.4                                                                               | 6.4                                                                               | 3.5                                                                               | 12.3                                                                              | 12.5                                                                              | 0.3                                                                               | 2.3                                                                                | 2.3                                                                                 | 11.4                                                                                | 2.8                                                                                 | 5.6                                                                                 |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 0.03                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                    | 0.06                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                    | 809                                                                               | 1495                                                                              | 818                                                                               | 215                                                                               | 1365                                                                              | 1174                                                                              | 9                                                                                 | 160                                                                                | 167                                                                                 | 526                                                                                 | 844                                                                                 | 1316                                                                                |
| V/C Ratio(X)                              | 0.84                                                                              | 0.24                                                                              | 0.24                                                                              | 0.61                                                                              | 0.56                                                                              | 0.44                                                                              | 0.54                                                                              | 0.29                                                                               | 0.29                                                                                | 0.82                                                                                | 0.15                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h                     | 1378                                                                              | 1495                                                                              | 818                                                                               | 1378                                                                              | 2037                                                                              | 1542                                                                              | 224                                                                               | 709                                                                                | 738                                                                                 | 798                                                                                 | 1791                                                                                | 2058                                                                                |
| 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                  | 34.6                                                                              | 16.6                                                                              | 16.6                                                                              | 43.3                                                                              | 29.9                                                                              | 19.5                                                                              | 47.1                                                                              | 40.3                                                                               | 40.3                                                                                | 38.9                                                                                | 28.6                                                                                | 14.6                                                                                |
| Incr Delay (d2), s/veh                    | 2.4                                                                               | 0.1                                                                               | 0.2                                                                               | 2.7                                                                               | 0.4                                                                               | 0.3                                                                               | 41.4                                                                              | 1.0                                                                                | 1.0                                                                                 | 4.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| 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                  | 8.8                                                                               | 3.0                                                                               | 3.3                                                                               | 1.7                                                                               | 5.8                                                                               | 4.8                                                                               | 0.2                                                                               | 1.2                                                                                | 1.2                                                                                 | 5.7                                                                                 | 1.4                                                                                 | 2.1                                                                                 |
| LnGrp Delay(d),s/veh                      | 37.0                                                                              | 16.7                                                                              | 16.8                                                                              | 46.1                                                                              | 30.3                                                                              | 19.8                                                                              | 88.5                                                                              | 41.3                                                                               | 41.2                                                                                | 42.8                                                                                | 28.7                                                                                | 14.7                                                                                |
| LnGrp LOS                                 | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h                       | 1244                                                                              |                                                                                   |                                                                                   | 1412                                                                              |                                                                                   |                                                                                   | 100                                                                               |                                                                                    |                                                                                     | 837                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                     | 27.8                                                                              |                                                                                   |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   | 43.6                                                                              |                                                                                    |                                                                                     | 31.3                                                                                |                                                                                     |                                                                                     |
| 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                  | 20.5                                                                              | 14.6                                                                              | 11.9                                                                              | 47.8                                                                              | 6.5                                                                               | 28.6                                                                              | 28.3                                                                              | 31.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s               | 22.0                                                                              | 38.0                                                                              | 38.0                                                                              | 38.0                                                                              | 12.0                                                                              | 48.0                                                                              | 38.0                                                                              | 38.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s              | 13.4                                                                              | 4.3                                                                               | 5.5                                                                               | 8.4                                                                               | 2.3                                                                               | 7.6                                                                               | 19.8                                                                              | 14.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                   | 1.1                                                                               | 2.6                                                                               | 0.4                                                                               | 14.3                                                                              | 0.0                                                                               | 2.7                                                                               | 2.5                                                                               | 11.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                       |                                                                                   |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                              |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
2: Kapolei Pkwy & Renton Rd

11/17/2014

|                             |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                    | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations         |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)              | 30                                                                                | 70                                                                                | 20                                                                                | 300                                                                               | 135                                                                               | 370                                                                               | 50                                                                                 | 980                                                                                 | 400                                                                                 | 280                                                                                 | 530                                                                                 | 45                                                                                  |
| Number                      | 3                                                                                 | 8                                                                                 | 18                                                                                | 7                                                                                 | 4                                                                                 | 14                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h        | 33                                                                                | 76                                                                                | 13                                                                                | 326                                                                               | 147                                                                               | 93                                                                                | 54                                                                                 | 1065                                                                                | 381                                                                                 | 304                                                                                 | 576                                                                                 | 42                                                                                  |
| Adj No. of Lanes            | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 3                                                                                   | 0                                                                                   | 1                                                                                   | 3                                                                                   | 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, %        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                  | 345                                                                               | 482                                                                               | 82                                                                                | 418                                                                               | 578                                                                               | 492                                                                               | 70                                                                                 | 1291                                                                                | 462                                                                                 | 338                                                                                 | 2421                                                                                | 175                                                                                 |
| Arrive On Green             | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.04                                                                               | 0.35                                                                                | 0.35                                                                                | 0.19                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h             | 1135                                                                              | 1551                                                                              | 265                                                                               | 1303                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 3697                                                                                | 1323                                                                                | 1774                                                                                | 4841                                                                                | 350                                                                                 |
| Grp Volume(v), veh/h        | 33                                                                                | 0                                                                                 | 89                                                                                | 326                                                                               | 147                                                                               | 93                                                                                | 54                                                                                 | 977                                                                                 | 469                                                                                 | 304                                                                                 | 402                                                                                 | 216                                                                                 |
| Grp Sat Flow(s),veh/h/ln    | 1135                                                                              | 0                                                                                 | 1816                                                                              | 1303                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1695                                                                                | 1629                                                                                | 1774                                                                                | 1695                                                                                | 1801                                                                                |
| Q Serve(g_s), s             | 2.7                                                                               | 0.0                                                                               | 4.3                                                                               | 29.1                                                                              | 7.1                                                                               | 5.2                                                                               | 3.6                                                                                | 31.6                                                                                | 31.6                                                                                | 20.1                                                                                | 8.1                                                                                 | 8.2                                                                                 |
| Cycle Q Clear(g_c), s       | 9.8                                                                               | 0.0                                                                               | 4.3                                                                               | 33.3                                                                              | 7.1                                                                               | 5.2                                                                               | 3.6                                                                                | 31.6                                                                                | 31.6                                                                                | 20.1                                                                                | 8.1                                                                                 | 8.2                                                                                 |
| Prop In Lane                | 1.00                                                                              |                                                                                   | 0.15                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.81                                                                                | 1.00                                                                                |                                                                                     | 0.19                                                                                |
| Lane Grp Cap(c), veh/h      | 345                                                                               | 0                                                                                 | 564                                                                               | 418                                                                               | 578                                                                               | 492                                                                               | 70                                                                                 | 1184                                                                                | 569                                                                                 | 338                                                                                 | 1695                                                                                | 901                                                                                 |
| V/C Ratio(X)                | 0.10                                                                              | 0.00                                                                              | 0.16                                                                              | 0.78                                                                              | 0.25                                                                              | 0.19                                                                              | 0.77                                                                               | 0.82                                                                                | 0.82                                                                                | 0.90                                                                                | 0.24                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h       | 399                                                                               | 0                                                                                 | 650                                                                               | 480                                                                               | 667                                                                               | 567                                                                               | 251                                                                                | 1242                                                                                | 597                                                                                 | 517                                                                                 | 1750                                                                                | 930                                                                                 |
| 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(l)          | 1.00                                                                              | 0.00                                                                              | 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    | 34.7                                                                              | 0.0                                                                               | 30.0                                                                              | 42.1                                                                              | 31.0                                                                              | 30.3                                                                              | 57.1                                                                               | 35.7                                                                                | 35.7                                                                                | 47.5                                                                                | 17.0                                                                                | 17.1                                                                                |
| Incr Delay (d2), s/veh      | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 7.1                                                                               | 0.2                                                                               | 0.2                                                                               | 16.1                                                                               | 4.5                                                                                 | 8.9                                                                                 | 13.2                                                                                | 0.1                                                                                 | 0.1                                                                                 |
| 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    | 0.9                                                                               | 0.0                                                                               | 2.2                                                                               | 11.2                                                                              | 3.7                                                                               | 2.3                                                                               | 2.1                                                                                | 15.5                                                                                | 15.6                                                                                | 11.1                                                                                | 3.8                                                                                 | 4.1                                                                                 |
| LnGrp Delay(d),s/veh        | 34.8                                                                              | 0.0                                                                               | 30.1                                                                              | 49.2                                                                              | 31.2                                                                              | 30.5                                                                              | 73.2                                                                               | 40.2                                                                                | 44.6                                                                                | 60.7                                                                                | 17.1                                                                                | 17.2                                                                                |
| LnGrp LOS                   | C                                                                                 |                                                                                   | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h         | 122                                                                               |                                                                                   |                                                                                   | 566                                                                               |                                                                                   |                                                                                   | 1500                                                                               |                                                                                     |                                                                                     | 922                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh       | 31.4                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 42.8                                                                               |                                                                                     |                                                                                     | 31.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer                       | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s    | 28.9                                                                              | 47.9                                                                              |                                                                                   | 43.3                                                                              | 10.7                                                                              | 66.1                                                                              |                                                                                    | 43.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s     | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s | 35.0                                                                              | 44.0                                                                              |                                                                                   | 43.0                                                                              | 17.0                                                                              | 62.0                                                                              |                                                                                    | 43.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+1), s | 22.1                                                                              | 33.6                                                                              |                                                                                   | 35.3                                                                              | 5.6                                                                               | 10.2                                                                              |                                                                                    | 11.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s     | 0.7                                                                               | 8.3                                                                               |                                                                                   | 2.0                                                                               | 0.1                                                                               | 25.0                                                                              |                                                                                    | 3.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay         | 38.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |      |        |       |        |       |
|--------------------------|--------|------|--------|-------|--------|-------|
| Int Delay, s/veh         | 7.7    |      |        |       |        |       |
|                          |        |      |        |       |        |       |
| Movement                 | EBT    | EBR  | WBL    | WBT   | NBL    | NBR   |
| Vol, veh/h               | 5      | 5    | 195    | 5     | 5      | 90    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0     | 0      | 0     |
| Sign Control             | Free   | Free | Free   | Free  | Stop   | Stop  |
| 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, %        | 2      | 2    | 2      | 2     | 2      | 2     |
| Mvmt Flow                | 5      | 5    | 212    | 5     | 5      | 98    |
|                          |        |      |        |       |        |       |
| Major/Minor              | Major1 |      | Major2 |       | Minor1 |       |
| Conflicting Flow All     | 0      | 0    | 11     | 0     | 437    | 8     |
| Stage 1                  | -      | -    | -      | -     | 8      | -     |
| Stage 2                  | -      | -    | -      | -     | 429    | -     |
| Critical Hdwy            | -      | -    | 4.12   | -     | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -    | -      | -     | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -    | -      | -     | 5.42   | -     |
| Follow-up Hdwy           | -      | -    | 2.218  | -     | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -    | 1608   | -     | 577    | 1074  |
| Stage 1                  | -      | -    | -      | -     | 1015   | -     |
| Stage 2                  | -      | -    | -      | -     | 657    | -     |
| Platoon blocked, %       | -      | -    | -      | -     | -      | -     |
| Mov Cap-1 Maneuver       | -      | -    | 1608   | -     | 501    | 1074  |
| Mov Cap-2 Maneuver       | -      | -    | -      | -     | 501    | -     |
| Stage 1                  | -      | -    | -      | -     | 1015   | -     |
| Stage 2                  | -      | -    | -      | -     | 570    | -     |
|                          |        |      |        |       |        |       |
| Approach                 | EB     |      | WB     |       | NB     |       |
| HCM Control Delay, s     | 0      |      | 7.4    |       | 9      |       |
| HCM LOS                  |        |      |        |       | A      |       |
|                          |        |      |        |       |        |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBL   | WBT    |       |
| Capacity (veh/h)         | 1013   | -    | -      | 1608  | -      |       |
| HCM Lane V/C Ratio       | 0.102  | -    | -      | 0.132 | -      |       |
| HCM Control Delay (s)    | 9      | -    | -      | 7.6   | 0      |       |
| HCM Lane LOS             | A      | -    | -      | A     | A      |       |
| HCM 95th %tile Q(veh)    | 0.3    | -    | -      | 0.5   | -      |       |

HCM 2010 TWSC  
4: Phillipine Sea & Roosevelt Ave

10/14/2014

Intersection

Int Delay, s/veh 4.7

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 70   | 295  | 0    | 0    | 655  | 20   | 0    | 0    | 0    | 15   | 0    | 180  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 76   | 321  | 0    | 0    | 712  | 22   | 0    | 0    | 0    | 16   | 0    | 196  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 734    | 0 | 0 | 321    | 0 | 0 | 1294   | 1207  | 321   | 1196   | 1196  | 723   |
| Stage 1              | -      | - | - | -      | - | - | 473    | 473   | -     | 723    | 723   | -     |
| Stage 2              | -      | - | - | -      | - | - | 821    | 734   | -     | 473    | 473   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 871    | - | - | 1239   | - | - | 139    | 183   | 720   | 163    | 186   | 426   |
| Stage 1              | -      | - | - | -      | - | - | 572    | 558   | -     | 417    | 431   | -     |
| Stage 2              | -      | - | - | -      | - | - | 369    | 426   | -     | 572    | 558   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 871    | - | - | 1239   | - | - | 69     | 164   | 720   | 150    | 166   | 426   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 69     | 164   | -     | 150    | 166   | -     |
| Stage 1              | -      | - | - | -      | - | - | 511    | 499   | -     | 373    | 431   | -     |
| Stage 2              | -      | - | - | -      | - | - | 200    | 426   | -     | 511    | 499   | -     |

| Approach             | EB  | WB | NB | SB   |
|----------------------|-----|----|----|------|
| HCM Control Delay, s | 1.8 | 0  | 0  | 26.6 |
| HCM LOS              |     |    | A  | D    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | -     | 871   | -   | -   | 1239 | -   | -   | 373   |
| HCM Lane V/C Ratio    | -     | 0.087 | -   | -   | -    | -   | -   | 0.568 |
| HCM Control Delay (s) | 0     | 9.5   | 0   | -   | 0    | -   | -   | 26.6  |
| HCM Lane LOS          | A     | A     | A   | -   | A    | -   | -   | D     |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0    | -   | -   | 3.4   |

HCM 2010 TWSC  
5: Essex Rd & Roosevelt Ave/Geiger Rd

10/14/2014

| Intersection             |        |      |        |       |        |       |
|--------------------------|--------|------|--------|-------|--------|-------|
| Int Delay, s/veh         | 0.5    |      |        |       |        |       |
| Movement                 | EBT    | EBR  | WBL    | WBT   | NBL    | NBR   |
| Vol, veh/h               | 295    | 10   | 25     | 685   | 10     | 5     |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0     | 0      | 0     |
| Sign Control             | Free   | Free | Free   | Free  | Stop   | Stop  |
| RT Channelized           | -      | None | -      | None  | -      | None  |
| Storage Length           | -      | -    | 50     | -     | 0      | -     |
| Veh in Median Storage, # | 0      | -    | -      | 0     | 0      | -     |
| Grade, %                 | 0      | -    | -      | 0     | 0      | -     |
| Peak Hour Factor         | 92     | 92   | 92     | 92    | 92     | 92    |
| Heavy Vehicles, %        | 2      | 2    | 2      | 2     | 2      | 2     |
| Mvmt Flow                | 321    | 11   | 27     | 745   | 11     | 5     |
| Major/Minor              | Major1 |      | Major2 |       | Minor1 |       |
| Conflicting Flow All     | 0      | 0    | 332    | 0     | 1125   | 326   |
| Stage 1                  | -      | -    | -      | -     | 326    | -     |
| Stage 2                  | -      | -    | -      | -     | 799    | -     |
| Critical Hdwy            | -      | -    | 4.12   | -     | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -    | -      | -     | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -    | -      | -     | 5.42   | -     |
| Follow-up Hdwy           | -      | -    | 2.218  | -     | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -    | 1227   | -     | 227    | 715   |
| Stage 1                  | -      | -    | -      | -     | 731    | -     |
| Stage 2                  | -      | -    | -      | -     | 443    | -     |
| Platoon blocked, %       | -      | -    | -      | -     | -      | -     |
| Mov Cap-1 Maneuver       | -      | -    | 1227   | -     | 222    | 715   |
| Mov Cap-2 Maneuver       | -      | -    | -      | -     | 222    | -     |
| Stage 1                  | -      | -    | -      | -     | 731    | -     |
| Stage 2                  | -      | -    | -      | -     | 433    | -     |
| Approach                 | EB     |      | WB     |       | NB     |       |
| HCM Control Delay, s     | 0      |      | 0.3    |       | 18.2   |       |
| HCM LOS                  |        |      |        |       | C      |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBL   | WBT    |       |
| Capacity (veh/h)         | 288    | -    | -      | 1227  | -      |       |
| HCM Lane V/C Ratio       | 0.057  | -    | -      | 0.022 | -      |       |
| HCM Control Delay (s)    | 18.2   | -    | -      | 8     | -      |       |
| HCM Lane LOS             | C      | -    | -      | A     | -      |       |
| HCM 95th %tile Q(veh)    | 0.2    | -    | -      | 0.1   | -      |       |

# HCM 2010 TWSC

## 6: Geiger Rd & Ewa Refuse Convenience Center

10/14/2014

### Intersection

Int Delay, s/veh 0

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 300  | 0    | 0    | 725  | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 326  | 0    | 0    | 788  | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 788    | 0 | 0 | 326    | 0 | 0 | 1114   | 1114  | 326   | 1114   | 1114  | 788   |
| Stage 1              | -      | - | - | -      | - | - | 326    | 326   | -     | 788    | 788   | -     |
| Stage 2              | -      | - | - | -      | - | - | 788    | 788   | -     | 326    | 326   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 831    | - | - | 1234   | - | - | 185    | 208   | 715   | 185    | 208   | 391   |
| Stage 1              | -      | - | - | -      | - | - | 687    | 648   | -     | 384    | 402   | -     |
| Stage 2              | -      | - | - | -      | - | - | 384    | 402   | -     | 687    | 648   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 831    | - | - | 1234   | - | - | 185    | 208   | 715   | 185    | 208   | 391   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 185    | 208   | -     | 185    | 208   | -     |
| Stage 1              | -      | - | - | -      | - | - | 687    | 648   | -     | 384    | 402   | -     |
| Stage 2              | -      | - | - | -      | - | - | 384    | 402   | -     | 687    | 648   | -     |

| Approach             | EB | WB | NB | SB |
|----------------------|----|----|----|----|
| HCM Control Delay, s | 0  | 0  | 0  | 0  |
| HCM LOS              |    |    | A  | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | -     | 831 | -   | -   | 1234 | -   | -   | -     |
| HCM Lane V/C Ratio    | -     | -   | -   | -   | -    | -   | -   | -     |
| HCM Control Delay (s) | 0     | 0   | -   | -   | 0    | -   | -   | 0     |
| HCM Lane LOS          | A     | A   | -   | -   | A    | -   | -   | A     |
| HCM 95th %tile Q(veh) | -     | 0   | -   | -   | 0    | -   | -   | -     |

| Intersection             |        |      |        |      |        |       |
|--------------------------|--------|------|--------|------|--------|-------|
| Int Delay, s/veh         | 0.4    |      |        |      |        |       |
| Movement                 | EBL    | EBT  | WBT    | WBR  | SBL    | SBR   |
| Vol, veh/h               | 0      | 295  | 710    | 5    | 10     | 10    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop  |
| 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, %        | 2      | 2    | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 0      | 321  | 772    | 5    | 11     | 11    |
| Major/Minor              | Major1 |      | Major2 |      | Minor2 |       |
| Conflicting Flow All     | 777    | 0    | -      | 0    | 1095   | 774   |
| Stage 1                  | -      | -    | -      | -    | 774    | -     |
| Stage 2                  | -      | -    | -      | -    | 321    | -     |
| Critical Hdwy            | 4.12   | -    | -      | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | 2.218  | -    | -      | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | 839    | -    | -      | -    | 236    | 398   |
| Stage 1                  | -      | -    | -      | -    | 455    | -     |
| Stage 2                  | -      | -    | -      | -    | 735    | -     |
| Platoon blocked, %       | -      | -    | -      | -    | -      | -     |
| Mov Cap-1 Maneuver       | 839    | -    | -      | -    | 236    | 398   |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | 236    | -     |
| Stage 1                  | -      | -    | -      | -    | 455    | -     |
| Stage 2                  | -      | -    | -      | -    | 735    | -     |
| Approach                 | EB     |      | WB     |      | SB     |       |
| HCM Control Delay, s     | 0      |      | 0      |      | 18.1   |       |
| HCM LOS                  |        |      |        |      | C      |       |
| Minor Lane/Major Mvmt    | EBL    | EBT  | WBT    | WBR  | SBLn1  |       |
| Capacity (veh/h)         | 839    | -    | -      | -    | 296    |       |
| HCM Lane V/C Ratio       | -      | -    | -      | -    | 0.073  |       |
| HCM Control Delay (s)    | 0      | -    | -      | -    | 18.1   |       |
| HCM Lane LOS             | A      | -    | -      | -    | C      |       |
| HCM 95th %tile Q(veh)    | 0      | -    | -      | -    | 0.2    |       |

HCM 2010 TWSC  
8: Geiger Rd & Honouliuli Drwy 2

10/14/2014

| Intersection             |        |       |      |        |      |      |        |       |       |        |       |       |
|--------------------------|--------|-------|------|--------|------|------|--------|-------|-------|--------|-------|-------|
| Int Delay, s/veh         | 0.3    |       |      |        |      |      |        |       |       |        |       |       |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT  | WBR  | NBL    | NBT   | NBR   | SBL    | SBT   | SBR   |
| Vol, veh/h               | 5      | 290   | 0    | 0      | 705  | 15   | 0      | 0     | 0     | 5      | 0     | 10    |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0    | 0    | 0      | 0     | 0     | 0      | 0     | 0     |
| Sign Control             | Free   | Free  | Free | Free   | Free | Free | Stop   | Stop  | Stop  | Stop   | Stop  | Stop  |
| RT Channelized           | -      | -     | None | -      | -    | None | -      | -     | None  | -      | -     | None  |
| Storage Length           | -      | -     | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Grade, %                 | -      | 0     | -    | -      | 0    | -    | -      | 0     | -     | -      | 0     | -     |
| Peak Hour Factor         | 92     | 92    | 92   | 92     | 92   | 92   | 92     | 92    | 92    | 92     | 92    | 92    |
| Heavy Vehicles, %        | 2      | 2     | 2    | 2      | 2    | 2    | 2      | 2     | 2     | 2      | 2     | 2     |
| Mvmt Flow                | 5      | 315   | 0    | 0      | 766  | 16   | 0      | 0     | 0     | 5      | 0     | 11    |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Major/Minor              | Major1 |       |      | Major2 |      |      | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All     | 783    | 0     | 0    | 315    | 0    | 0    | 1106   | 1109  | 315   | 1100   | 1100  | 774   |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 326    | 326   | -     | 774    | 774   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 780    | 783   | -     | 326    | 326   | -     |
| Critical Hdwy            | 4.12   | -     | -    | 4.12   | -    | -    | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -    | -    | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy           | 2.218  | -     | -    | 2.218  | -    | -    | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver       | 835    | -     | -    | 1245   | -    | -    | 188    | 210   | 725   | 190    | 212   | 398   |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 687    | 648   | -     | 391    | 408   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 388    | 404   | -     | 687    | 648   | -     |
| Platoon blocked, %       | -      | -     | -    | -      | -    | -    | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver       | 835    | -     | -    | 1245   | -    | -    | 182    | 209   | 725   | 189    | 211   | 398   |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -    | -    | 182    | 209   | -     | 189    | 211   | -     |
| Stage 1                  | -      | -     | -    | -      | -    | -    | 682    | 643   | -     | 388    | 408   | -     |
| Stage 2                  | -      | -     | -    | -      | -    | -    | 377    | 404   | -     | 682    | 643   | -     |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Approach                 | EB     |       |      | WB     |      |      | NB     |       |       | SB     |       |       |
| HCM Control Delay, s     | 0.2    |       |      | 0      |      |      | 0      |       |       | 18.1   |       |       |
| HCM LOS                  |        |       |      |        |      |      | A      |       |       | C      |       |       |
|                          |        |       |      |        |      |      |        |       |       |        |       |       |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL  | WBT  | WBR    | SBLn1 |       |        |       |       |
| Capacity (veh/h)         | -      | 835   | -    | -      | 1245 | -    | -      | 291   |       |        |       |       |
| HCM Lane V/C Ratio       | -      | 0.007 | -    | -      | -    | -    | -      | 0.056 |       |        |       |       |
| HCM Control Delay (s)    | 0      | 9.3   | 0    | -      | 0    | -    | -      | 18.1  |       |        |       |       |
| HCM Lane LOS             | A      | A     | A    | -      | A    | -    | -      | C     |       |        |       |       |
| HCM 95th %tile Q(veh)    | -      | 0     | -    | -      | 0    | -    | -      | 0.2   |       |        |       |       |

# HCM 2010 Signalized Intersection Summary 9: Kapolei Pkwy & Geiger Rd

10/27/2014

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 10                                                                                | 125                                                                               | 185                                                                               | 95                                                                                | 285                                                                               | 235                                                                               | 390                                                                                | 1015                                                                                | 180                                                                                 | 160                                                                                 | 720                                                                                 | 50                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| 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                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 11                                                                                | 136                                                                               | 17                                                                                | 103                                                                               | 310                                                                               | 42                                                                                | 424                                                                                | 1103                                                                                | 109                                                                                 | 174                                                                                 | 783                                                                                 | 12                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 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                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 18                                                                                | 434                                                                               | 53                                                                                | 128                                                                               | 370                                                                               | 314                                                                               | 458                                                                                | 1682                                                                                | 752                                                                                 | 203                                                                                 | 1175                                                                                | 525                                                                                 |
| Arrive On Green              | 0.01                                                                              | 0.14                                                                              | 0.14                                                                              | 0.07                                                                              | 0.20                                                                              | 0.20                                                                              | 0.26                                                                               | 0.48                                                                                | 0.48                                                                                | 0.11                                                                                | 0.33                                                                                | 0.33                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3173                                                                              | 391                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 3539                                                                                | 1583                                                                                | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 11                                                                                | 75                                                                                | 78                                                                                | 103                                                                               | 310                                                                               | 42                                                                                | 424                                                                                | 1103                                                                                | 109                                                                                 | 174                                                                                 | 783                                                                                 | 12                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1794                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1583                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 0.7                                                                               | 4.6                                                                               | 4.7                                                                               | 6.8                                                                               | 19.1                                                                              | 2.6                                                                               | 27.8                                                                               | 28.3                                                                                | 4.6                                                                                 | 11.5                                                                                | 22.6                                                                                | 0.6                                                                                 |
| Cycle Q Clear(g_c), s        | 0.7                                                                               | 4.6                                                                               | 4.7                                                                               | 6.8                                                                               | 19.1                                                                              | 2.6                                                                               | 27.8                                                                               | 28.3                                                                                | 4.6                                                                                 | 11.5                                                                                | 22.6                                                                                | 0.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.22                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 18                                                                                | 242                                                                               | 245                                                                               | 128                                                                               | 370                                                                               | 314                                                                               | 458                                                                                | 1682                                                                                | 752                                                                                 | 203                                                                                 | 1175                                                                                | 525                                                                                 |
| V/C Ratio(X)                 | 0.61                                                                              | 0.31                                                                              | 0.32                                                                              | 0.80                                                                              | 0.84                                                                              | 0.13                                                                              | 0.93                                                                               | 0.66                                                                                | 0.14                                                                                | 0.86                                                                                | 0.67                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 193                                                                               | 549                                                                               | 557                                                                               | 193                                                                               | 578                                                                               | 491                                                                               | 580                                                                                | 1960                                                                                | 877                                                                                 | 298                                                                                 | 1395                                                                                | 624                                                                                 |
| 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     | 58.8                                                                              | 46.4                                                                              | 46.4                                                                              | 54.5                                                                              | 45.9                                                                              | 39.3                                                                              | 43.1                                                                               | 23.8                                                                                | 17.6                                                                                | 51.8                                                                                | 34.2                                                                                | 26.8                                                                                |
| Incr Delay (d2), s/veh       | 28.3                                                                              | 0.7                                                                               | 0.7                                                                               | 13.4                                                                              | 6.3                                                                               | 0.2                                                                               | 18.4                                                                               | 0.6                                                                                 | 0.1                                                                                 | 14.8                                                                                | 0.9                                                                                 | 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     | 0.5                                                                               | 2.3                                                                               | 2.4                                                                               | 3.8                                                                               | 10.5                                                                              | 1.2                                                                               | 15.9                                                                               | 13.9                                                                                | 2.0                                                                                 | 6.4                                                                                 | 11.2                                                                                | 0.3                                                                                 |
| LnGrp Delay(d),s/veh         | 87.1                                                                              | 47.1                                                                              | 47.2                                                                              | 67.9                                                                              | 52.3                                                                              | 39.5                                                                              | 61.5                                                                               | 24.5                                                                                | 17.7                                                                                | 66.6                                                                                | 35.1                                                                                | 26.8                                                                                |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | C                                                                                   | B                                                                                   | E                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 164                                                                               |                                                                                   |                                                                                   | 455                                                                               |                                                                                   |                                                                                   | 1636                                                                               |                                                                                     |                                                                                     | 969                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 49.8                                                                              |                                                                                   |                                                                                   | 54.6                                                                              |                                                                                   |                                                                                   | 33.6                                                                               |                                                                                     |                                                                                     | 40.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | 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     | 19.7                                                                              | 62.6                                                                              | 14.6                                                                              | 22.3                                                                              | 36.8                                                                              | 45.6                                                                              | 7.2                                                                                | 29.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 20.0                                                                              | 66.0                                                                              | 13.0                                                                              | 37.0                                                                              | 39.0                                                                              | 47.0                                                                              | 13.0                                                                               | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.5                                                                              | 30.3                                                                              | 8.8                                                                               | 6.7                                                                               | 29.8                                                                              | 24.6                                                                              | 2.7                                                                                | 21.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 20.0                                                                              | 0.1                                                                               | 3.1                                                                               | 1.0                                                                               | 14.9                                                                              | 0.0                                                                                | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 39.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |