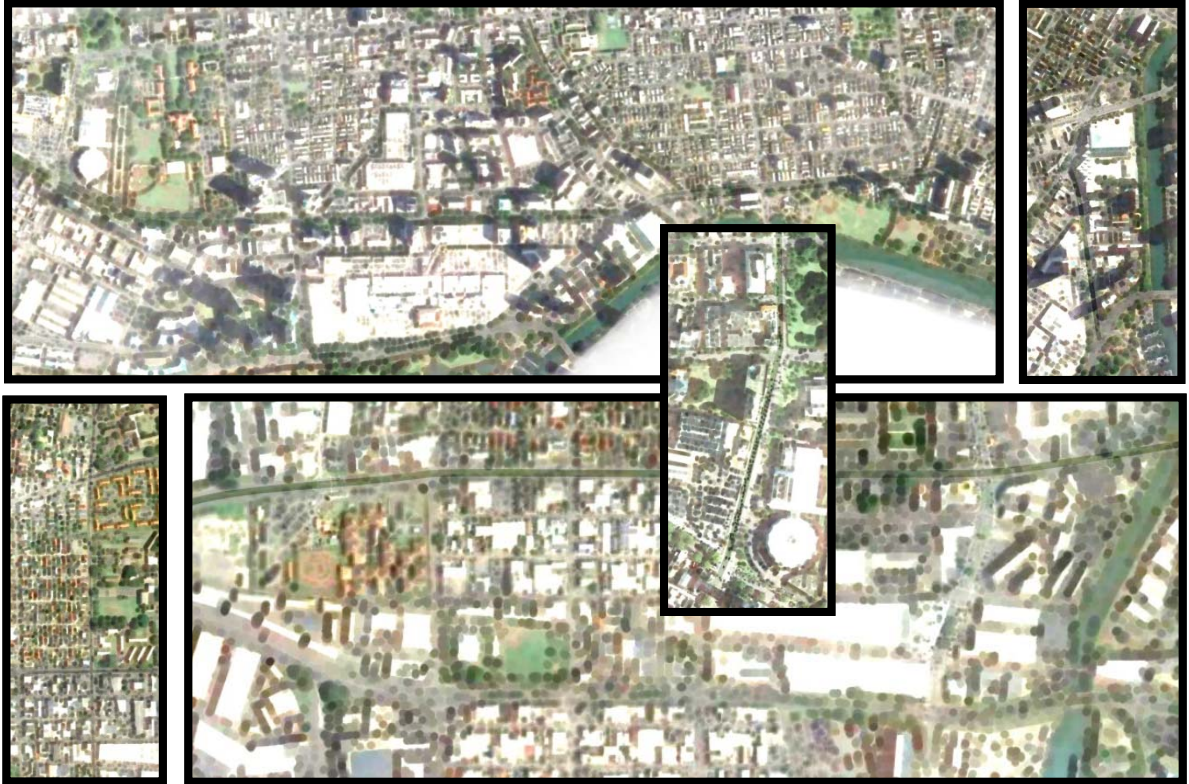


# ***Contra-Flow Operations***



***Within City and County of Honolulu Jurisdiction***

## **Traffic Assessment Report**

Prepared For  
City and County of  
Honolulu

Prepared By  
Wilson Okamoto  
Corporation

February 2016

***TRAFFIC ASSESSMENT REPORT***

***OF***

***CONTRA-FLOW OPERATIONS***

***Within City and County of Honolulu Jurisdiction***

*Prepared for:*

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February 2016



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## **I. INTRODUCTION**

The purpose of this study is to assess traffic operations along corridors within Honolulu on the island of Oahu with existing contra-flow operations. In addition, additional corridors were assessed to determine if new contra-flow operations should be implemented. The study corridors include Kapiolani Boulevard, Ward Avenue, Atkinson Drive, Dillingham Boulevard, and Kalihi Street. This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the study corridors and existing contra-flow operations.
2. Evaluation of roadway and traffic operations without and with contra-flow operations.
3. Recommendations of modifications to existing contra-flow operations and for implementation of new contra-flow operations, if appropriate.

## **II. EXISTING TRAFFIC CONDITIONS**

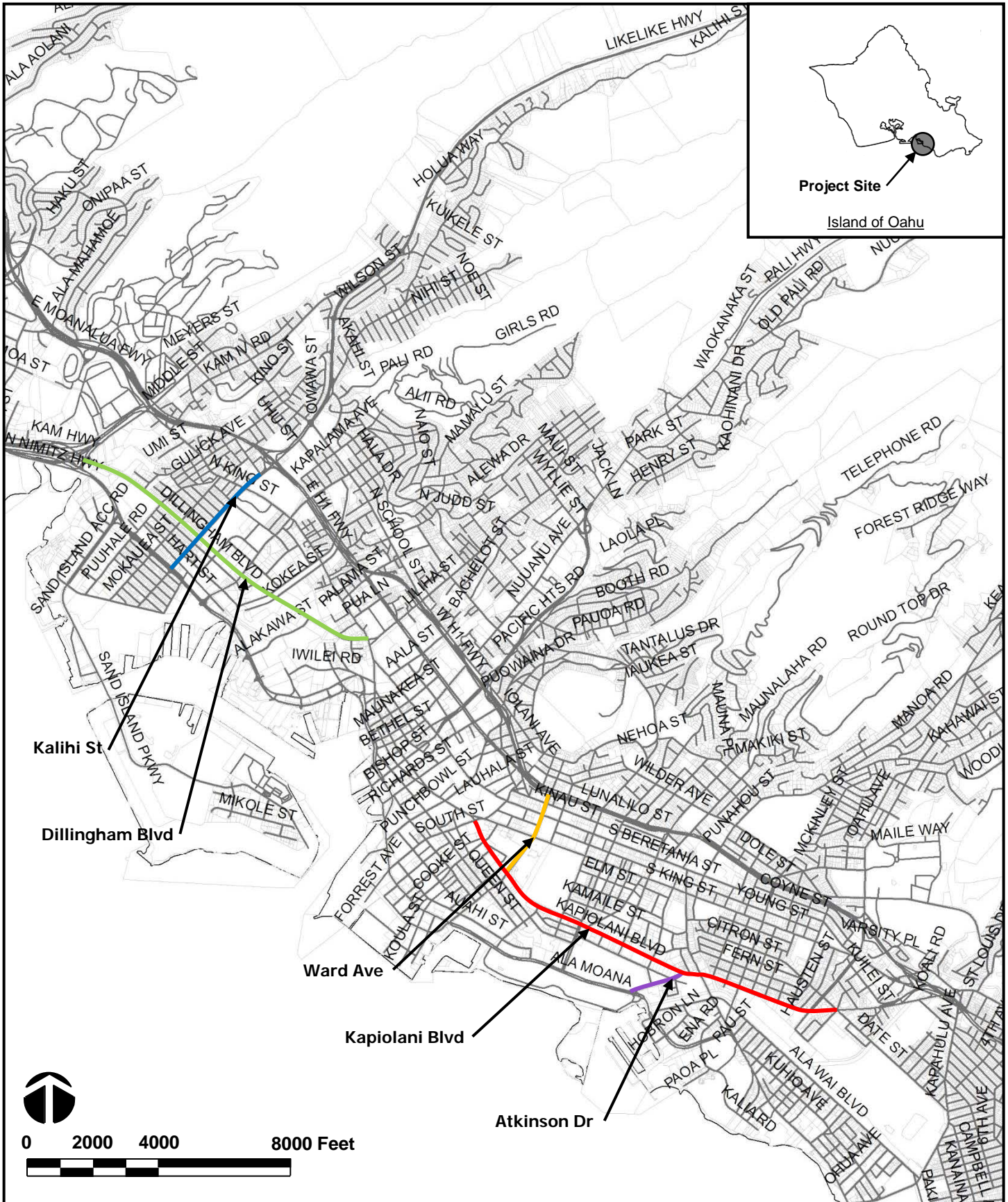
### **A. Area Roadway System**

There are currently three corridors within the City and County of Honolulu's jurisdiction where contra-flow operations have been implemented. These corridors are Kapiolani Boulevard, Ward Avenue, and Atkinson Drive (see Figure 1). Two additional corridors were included in the scope of this study to determine if the implementation of contra-flow operations would be appropriate. These additional corridors were Dillingham Boulevard and Kalihi Street. The study corridors and existing contra-flow operations are summarized below:

#### *Kapiolani Boulevard*

Kapiolani Boulevard is predominantly a six-lane, two-way roadway that serves as a major east-west corridor through the downtown Honolulu area. Auxiliary turning lanes and traffic signal systems are provided at key intersections along the roadway alignment (see Figure 2). Currently, contra-flow operations are implemented along Kapiolani Boulevard during the AM and PM peak periods.

During the AM peak period, contra-flow operations are implemented between South Street and east of Date Street/Kamoku Street to provide an additional westbound lane (see typical roadway section below). In conjunction with these operations, turning movements at some of the intersections along this corridor are restricted (see Figure 3). In addition, an additional westbound left-turn lane is provided at the intersection with Atkinson Drive to facilitate left-turning traffic from Kapiolani Boulevard to that roadway.



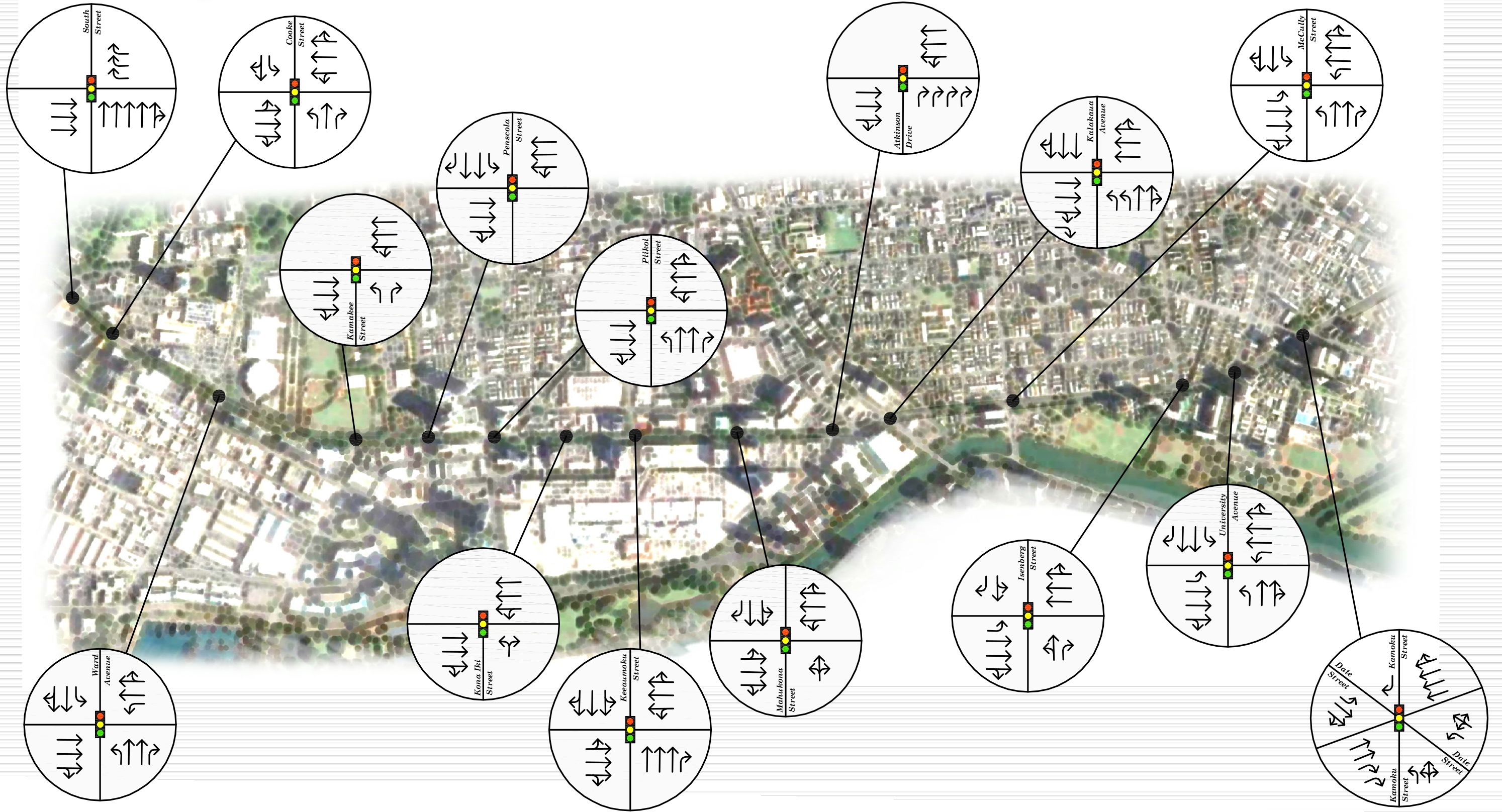
**CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS**

**LOCATION MAP AND VICINITY MAP**

**FIGURE**

**1**





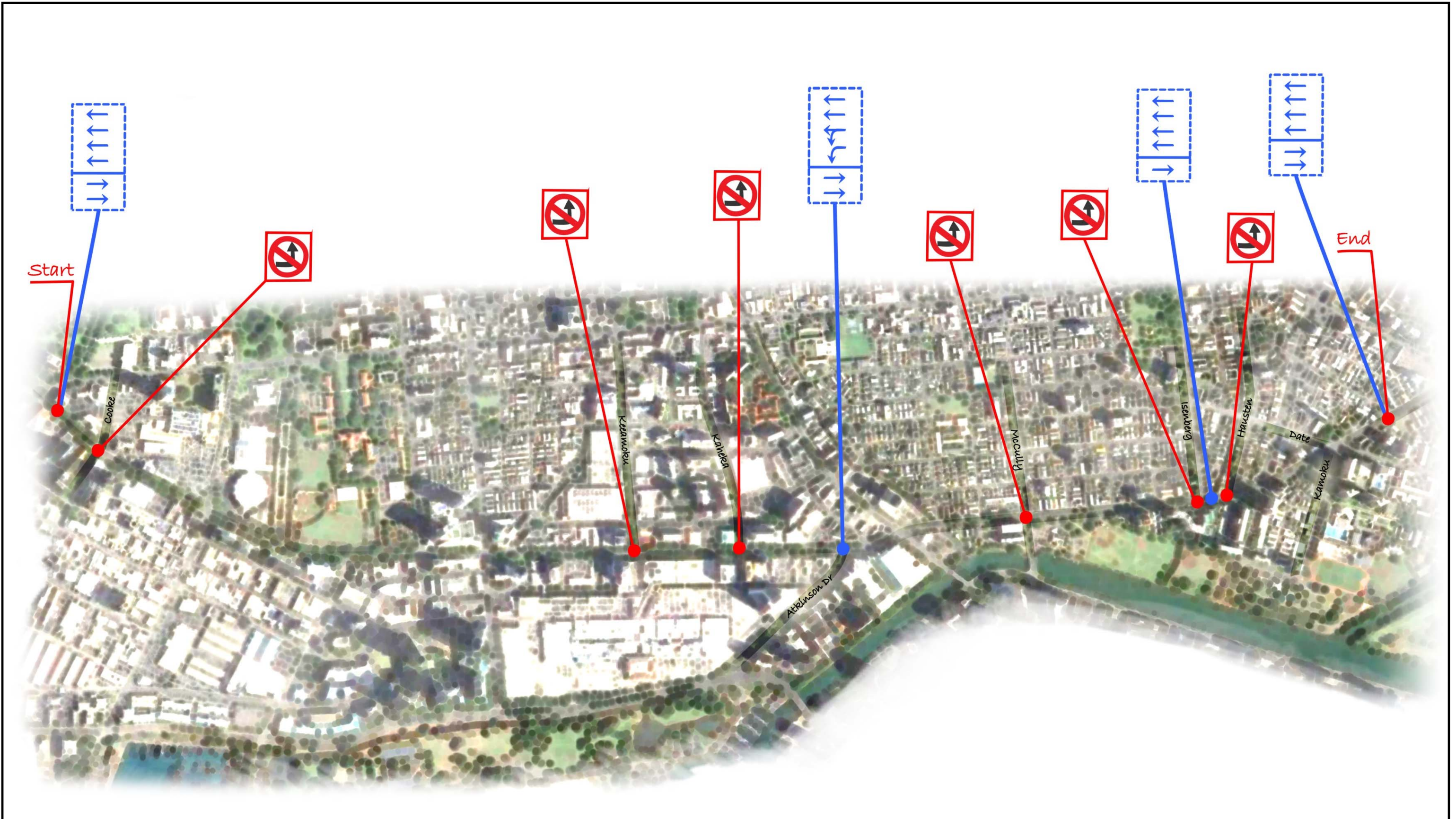
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS  
KAPIOLANI BOULEVARD

FIGURE

2





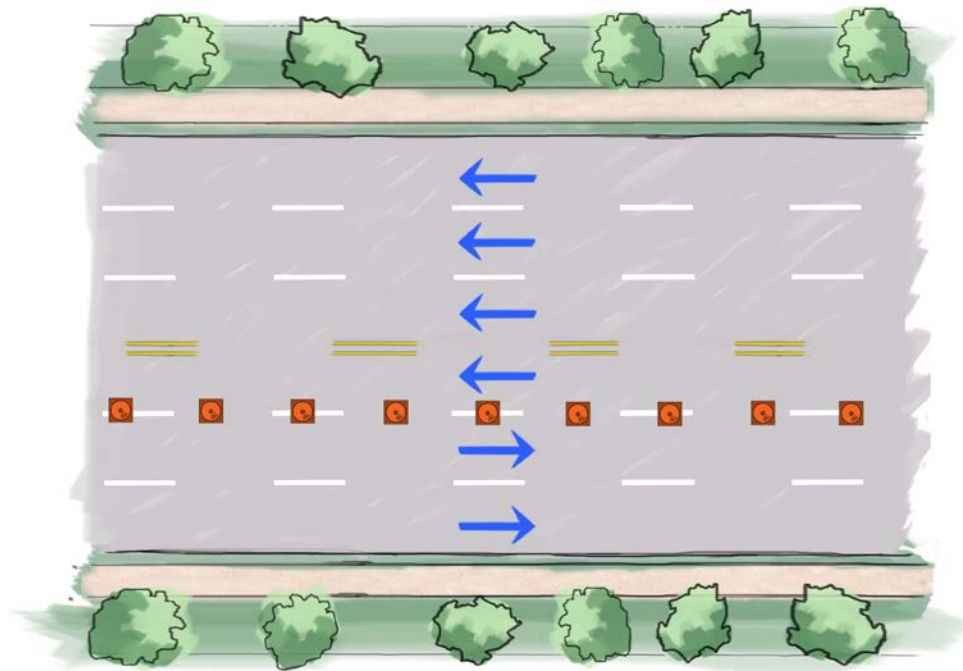
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS  
 KAPIOLANI BOULEVARD – AM PEAK PERIOD

FIGURE  
 3

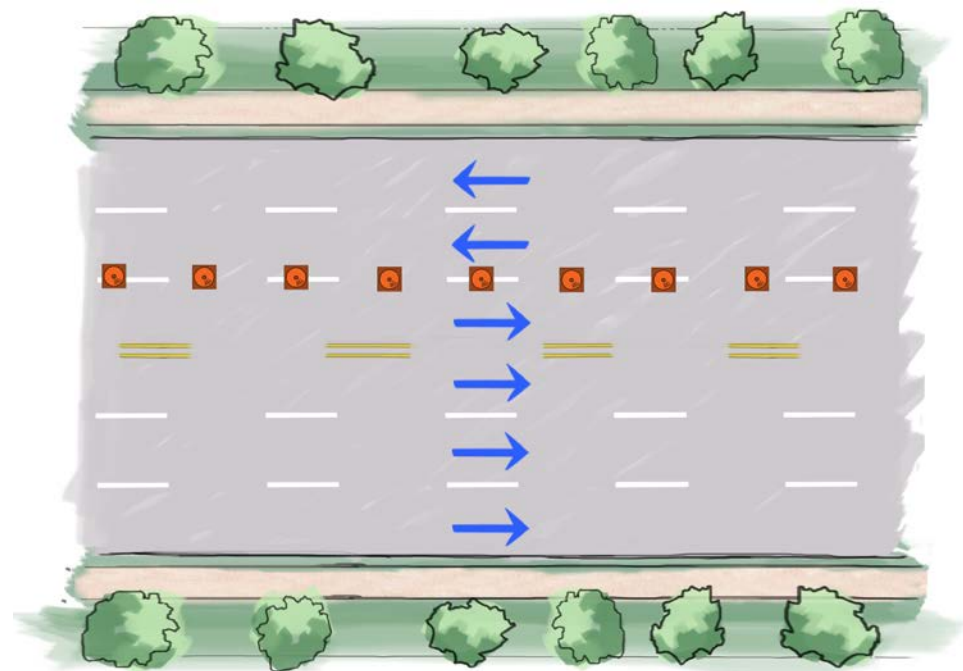






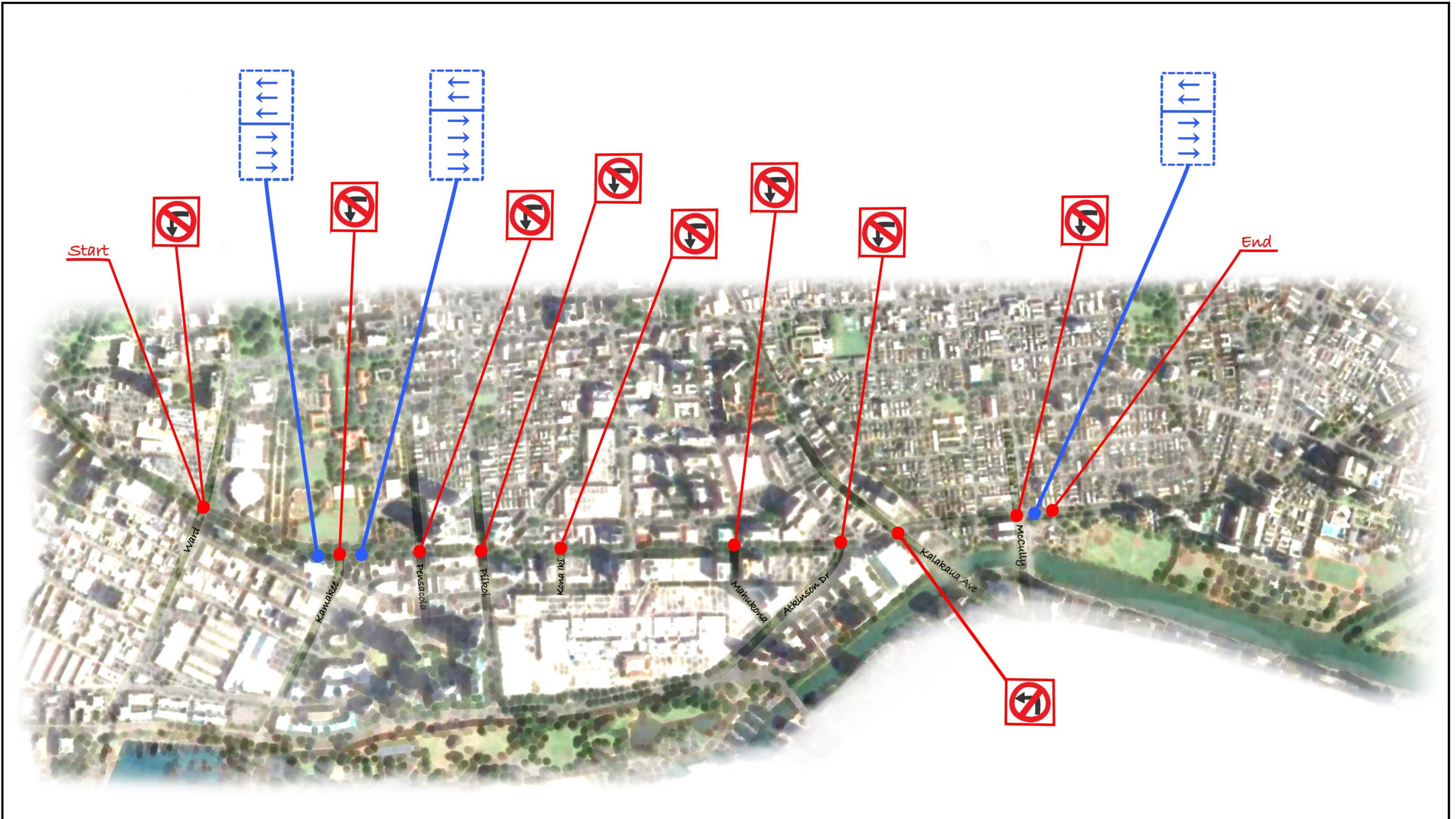
*Kapiolani Boulevard AM Peak Period Typical Section*

During the PM peak period, contra-flow operations are implemented between Ward Avenue and east of McCully Street to provide an additional eastbound lane (see typical section below). In conjunction with these operations, turning movements at some of the intersections along this corridor are restricted including northbound left-turn traffic movements along Kalakaua Avenue (see Figure 4).



*Kapiolani Boulevard PM Peak Period Typical Section*





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS  
 KAPIOLANI BOULEVARD – PM PEAK PERIOD



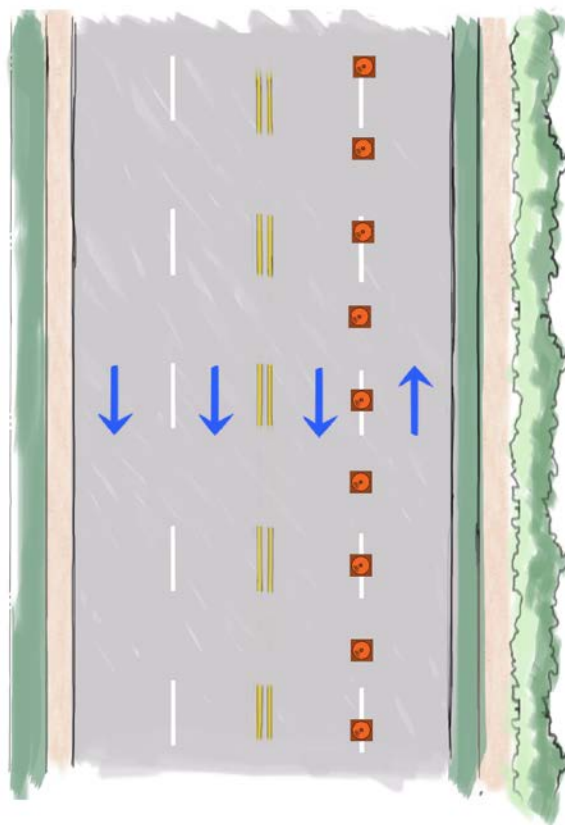
FIGURE  
 4



Ward Avenue

Ward Avenue is generally a four-lane, two-way roadway that serves as a major north-south connector roadway for the surrounding east-west regional corridors. Auxiliary turning lanes and traffic signal systems are provided at key intersections along the roadway alignment (see Figure 5). Currently, contra-flow operations are implemented along Ward Avenue during the AM peak period.

During the AM peak period, contra-flow operations are implemented between Kinau Street and South King Street to provide an additional southbound lane (see typical roadway section below). In conjunction with these operations, turning movements at the intersection with Hotel Street are restricted (see Figure 6).



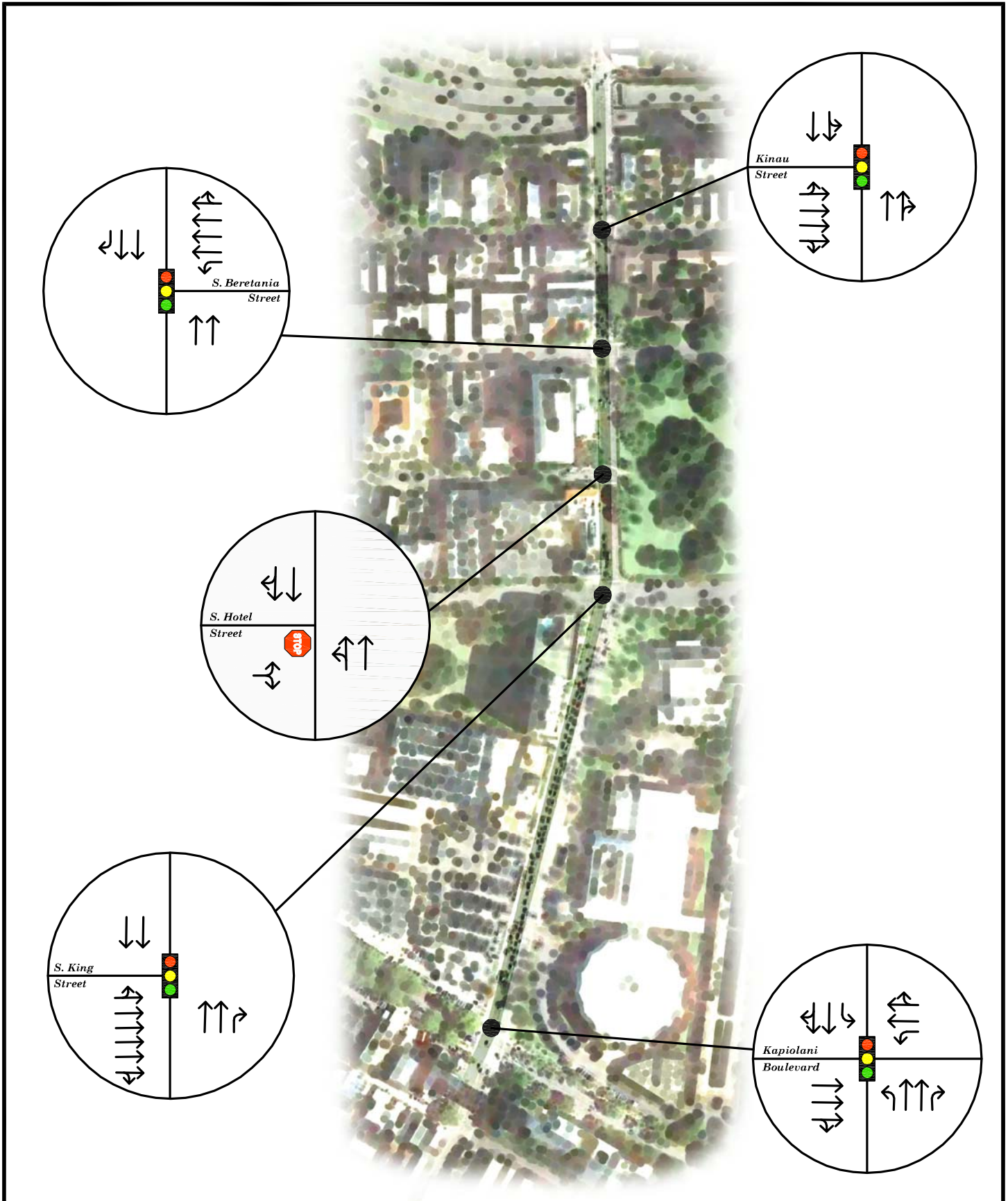
*Ward Avenue AM Peak Period  
Typical Section*

Atkinson Drive

Atkinson Drive is generally a five-lane, two-way roadway that serves as a connector roadway between Kapiolani Boulevard and Ala Moana Boulevard. Auxiliary turning lanes and traffic signal systems are provided at key intersections along the roadway alignment (see Figure 7). Currently, contra-flow operations are implemented along Atkinson Drive during the AM peak period.

During the AM peak period, contra-flow operations are implemented between Kapiolani Boulevard and Kahakai Drive to facilitate the double left-turn traffic movement from Kapiolani Boulevard (see Figure 8 and the typical roadway section below).





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS  
WARD AVENUE

FIGURE  
5

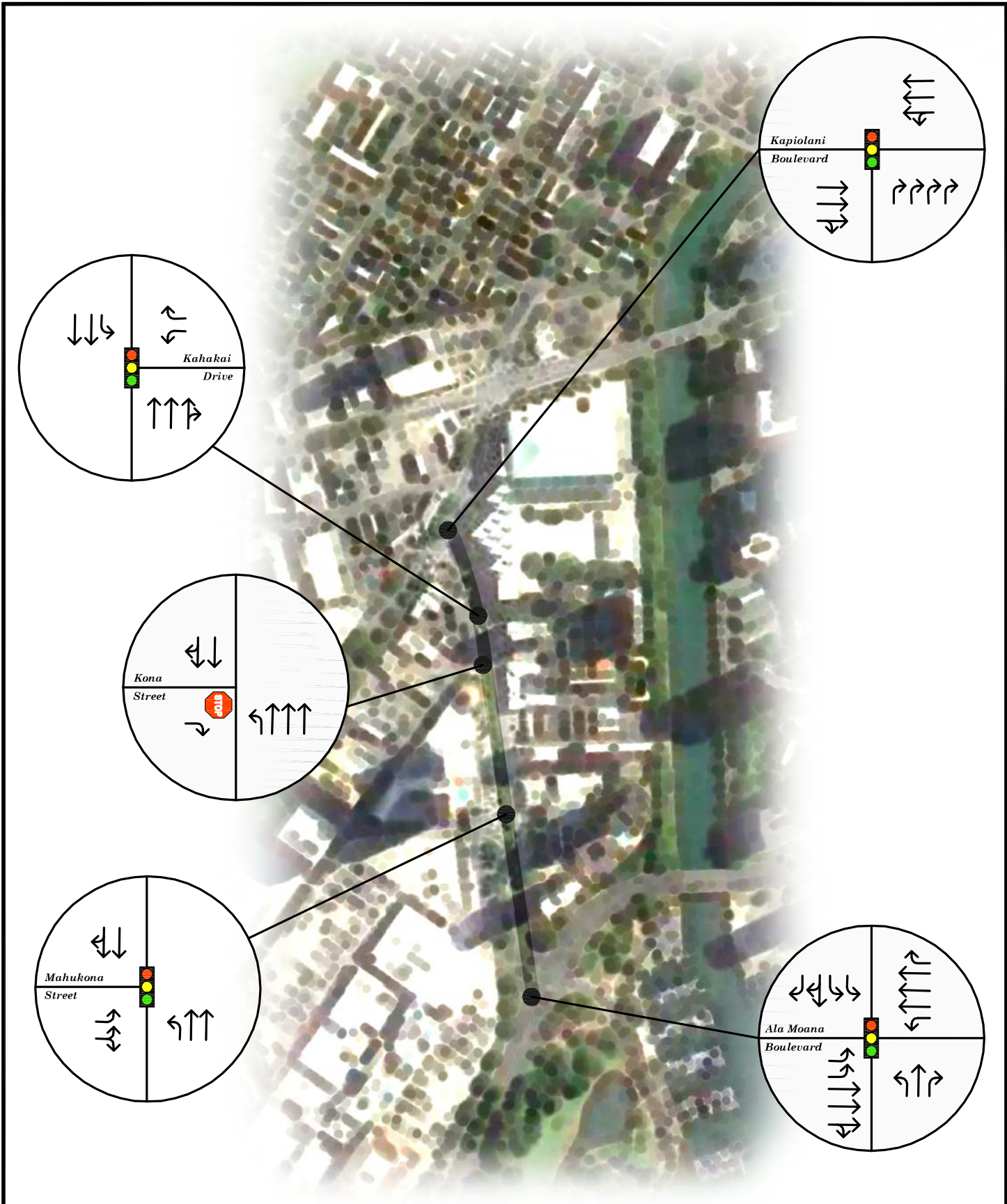


CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS  
WARD AVENUE – AM PEAK PERIOD

FIGURE  
6

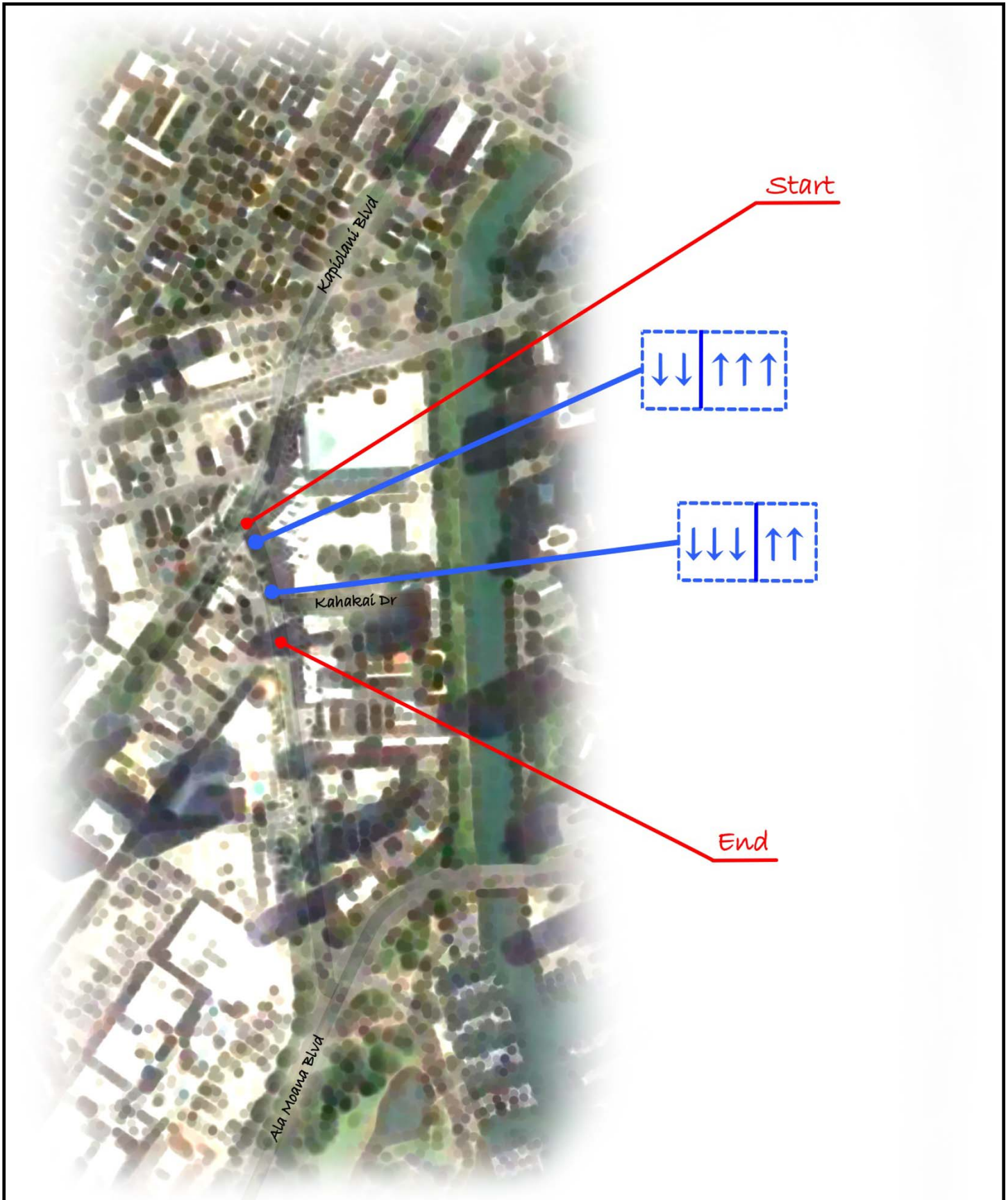




CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS  
ATKINSON DRIVE

FIGURE  
7

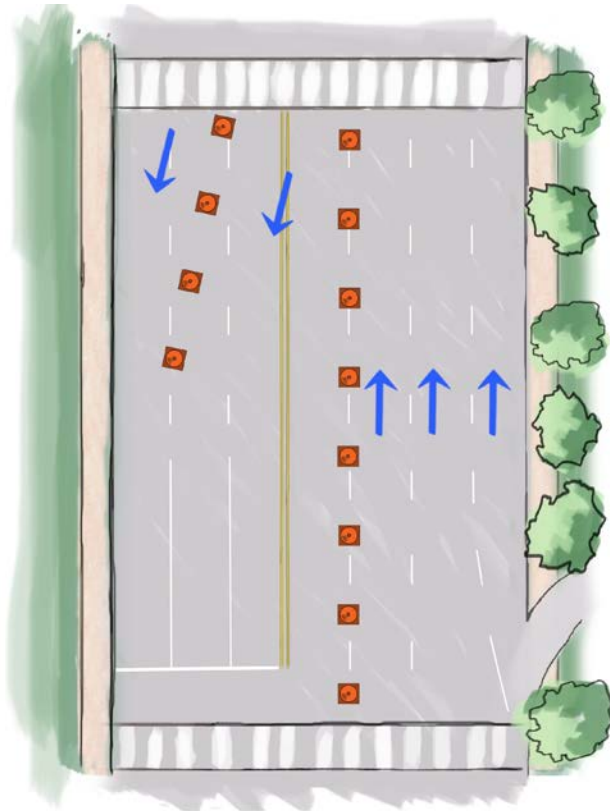


CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS  
 ATKINSON DRIVE – AM PEAK PERIOD

FIGURE

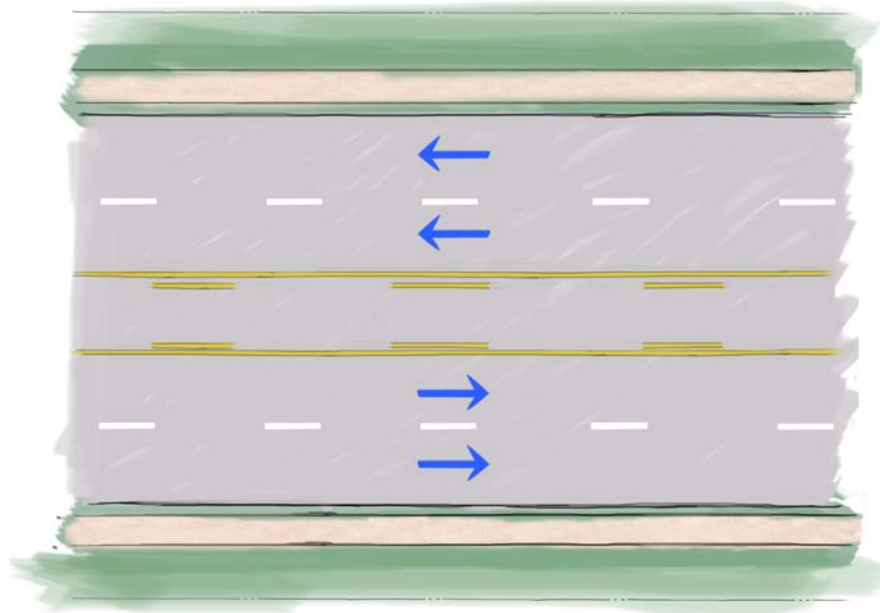
8



*Atkinson Drive AM Peak Period  
Typical Section*

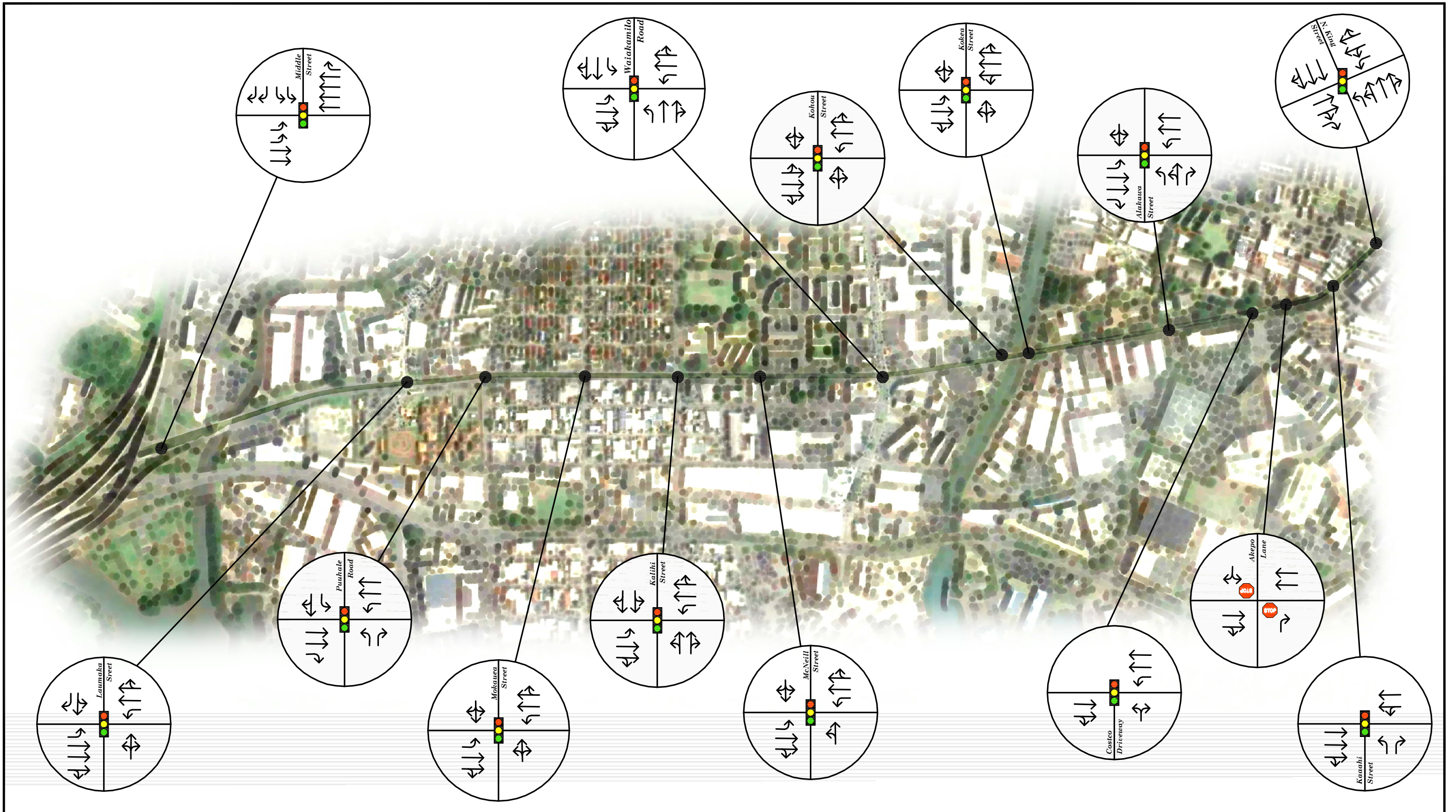
*Dillingham Boulevard*

Dillingham Boulevard is predominantly a five-lane, two-way roadway that serves as a major east-west corridor through the Kalihi-Kapalama area. Auxiliary turning lanes and traffic signal systems are provided at key intersections along the roadway alignment (see typical section below and Figure 9).



*Dillingham Boulevard Typical Section*





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

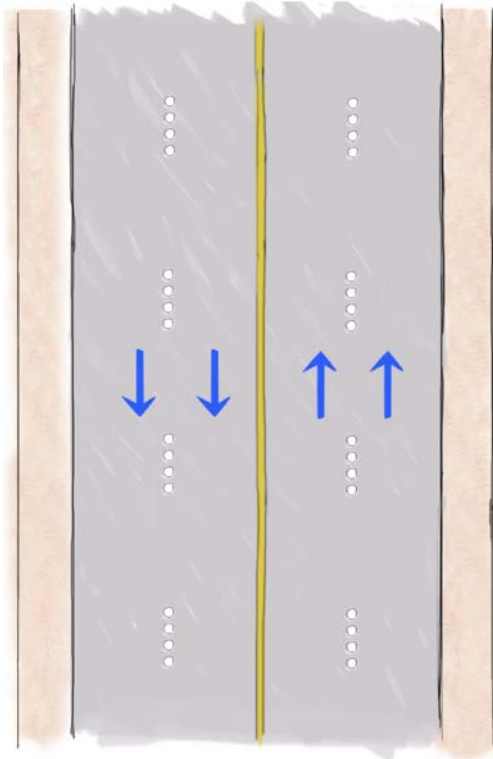
EXISTING LANE CONFIGURATIONS  
DILLINGHAM BOULEVARD

FIGURE

9

*Kalihi Street*

Kalihi Street is predominantly a four-lane, two-way roadway that serves as a north-south connector roadway for the surrounding east-west regional corridors. Auxiliary turning lanes and traffic signal systems are provided at key intersections along the roadway alignment (see typical section below and Figure 10).



*Kalihi Street Typical Section*

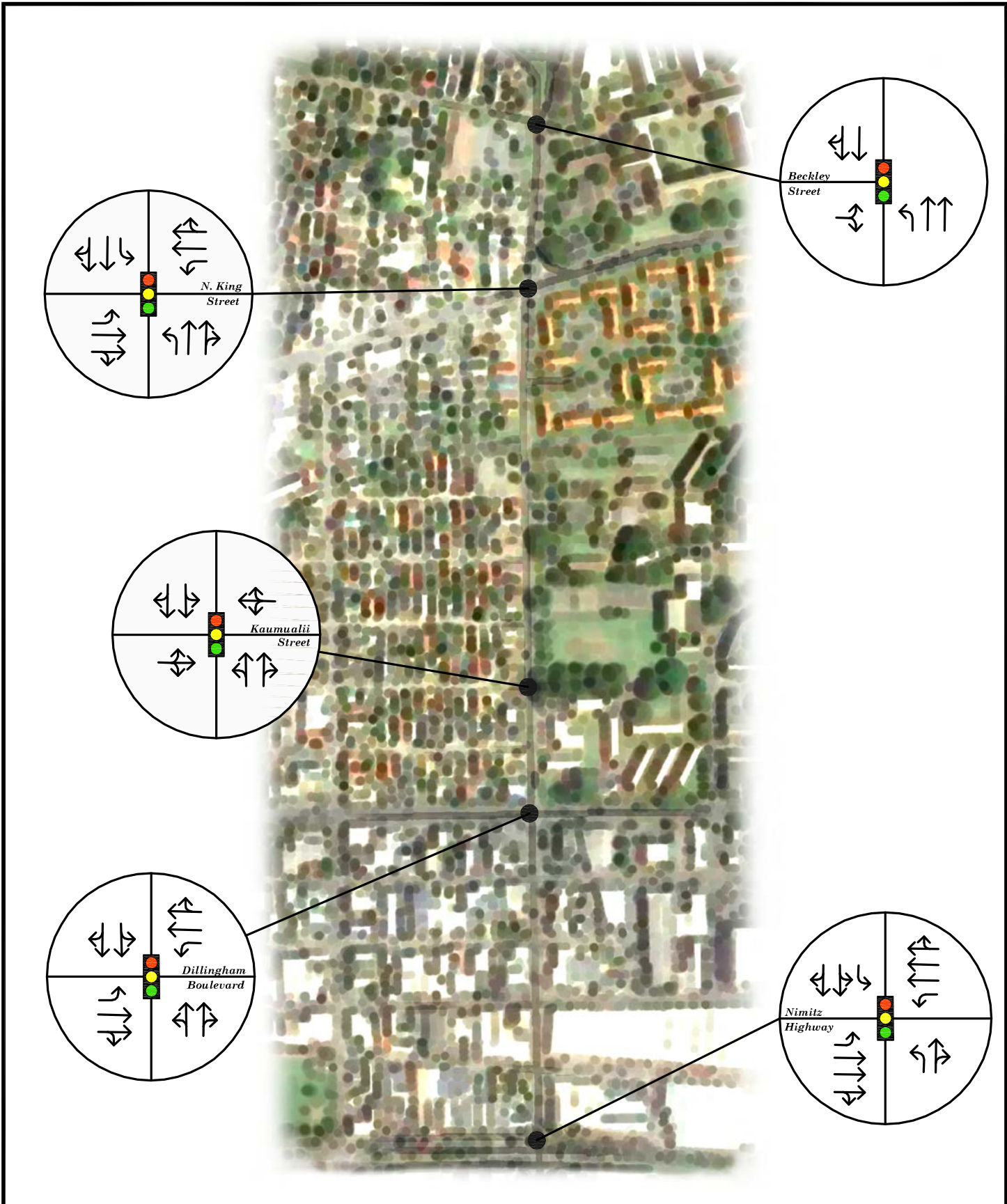
**B. Traffic Volumes and Conditions**

**1. General**

**a. Field Investigation**

Field investigations were primarily conducted during October 2013 to supplement counts taken earlier that year. These investigations consisted of manual turning movement count surveys along the following corridors during the AM peak hours between 6:00 AM and 9:00 AM, and the PM peak hours between 3:00 PM and 6:00 PM:





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS  
KALIHI STREET

FIGURE  
10

*Kapiolani Boulevard*

South Street  
Cooke Street  
Ward Avenue  
Kamakee Street  
Pensacola Street  
Piikoi Street  
Kona Iki Street  
Keeaumoku Street  
Mahukona Street/Kaheka Street  
Atkinson Drive  
Kalakaua Avenue  
McCully Street  
University Avenue  
Date Street/Kamoku Street

*Dillingham Boulevard*

Middle Street  
Laumaka Street  
Puuhale Road  
Mokauea Street  
Kalihi Street  
McNeill Street  
Waiakamilo Road  
Kohou Street  
Kokea Street  
Alakawa Street  
Costco Driveway  
Akepo Lane  
Kaaahi Street  
Liliha Street/North King Street

*Ward Avenue*

Kinau Street  
South Beretania Street  
Hotel Street  
South King Street  
Kapiolani Boulevard

*Kalihi Street*

Beckley Street  
North King Street  
Kaumualii Street  
Dillingham Boulevard  
Nimitz Highway

*Atkinson Drive*

Kapiolani Boulevard  
Kahakai Drive  
Kona Street  
Mahukona Street  
Ala Moana Boulevard

In addition, travel time data was collected along the study corridors during the AM and PM peak periods. Appendix A includes the collected traffic data.

**b. Capacity Analysis Methodology**

The highway capacity analysis performed in this study is based upon procedures presented in the “Highway Capacity Manual”, Transportation Research Board, 2000, and the “Synchro” software, developed by Trafficware. The analysis is based on the concept of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak periods of traffic.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS “A” through “F”; LOS “A” representing ideal or free-flow traffic operating conditions and LOS “F” unacceptable or potentially congested traffic operating conditions.

“Volume-to-Capacity” (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road’s carrying capacity. The LOS definitions are included in Appendix B.

**2. Existing Peak Hour Traffic**

**a. Kapiolani Boulevard**

Along Kapiolani Boulevard, the morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM, while the afternoon peak hour of traffic generally occurs between 4:30 PM and 5:30 PM. The existing AM and PM peak period traffic volumes along Kapiolani Boulevard are shown in Figures 11 and 12, and summarized in Table 1.

**Table 1: Kapiolani Boulevard Traffic Volumes**

Segment	AM Peak Hour		PM Peak Hour	
	EB	WB	EB	WB
South St to Cooke Rd	690 48%	<b>760</b> <b>52%</b>	<b>1,110</b> <b>57%</b>	830 43%
Cooke Rd to Ward Ave	610 32%	<b>1,320</b> <b>68%</b>	<b>1,280</b> <b>50%</b>	1,260 50%
Ward Ave to Kamakee St	670 30%	<b>1,600</b> <b>70%</b>	<b>1,620</b> <b>58%</b>	1,150 42%

Notes: EB = Eastbound; WB = Westbound (rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)





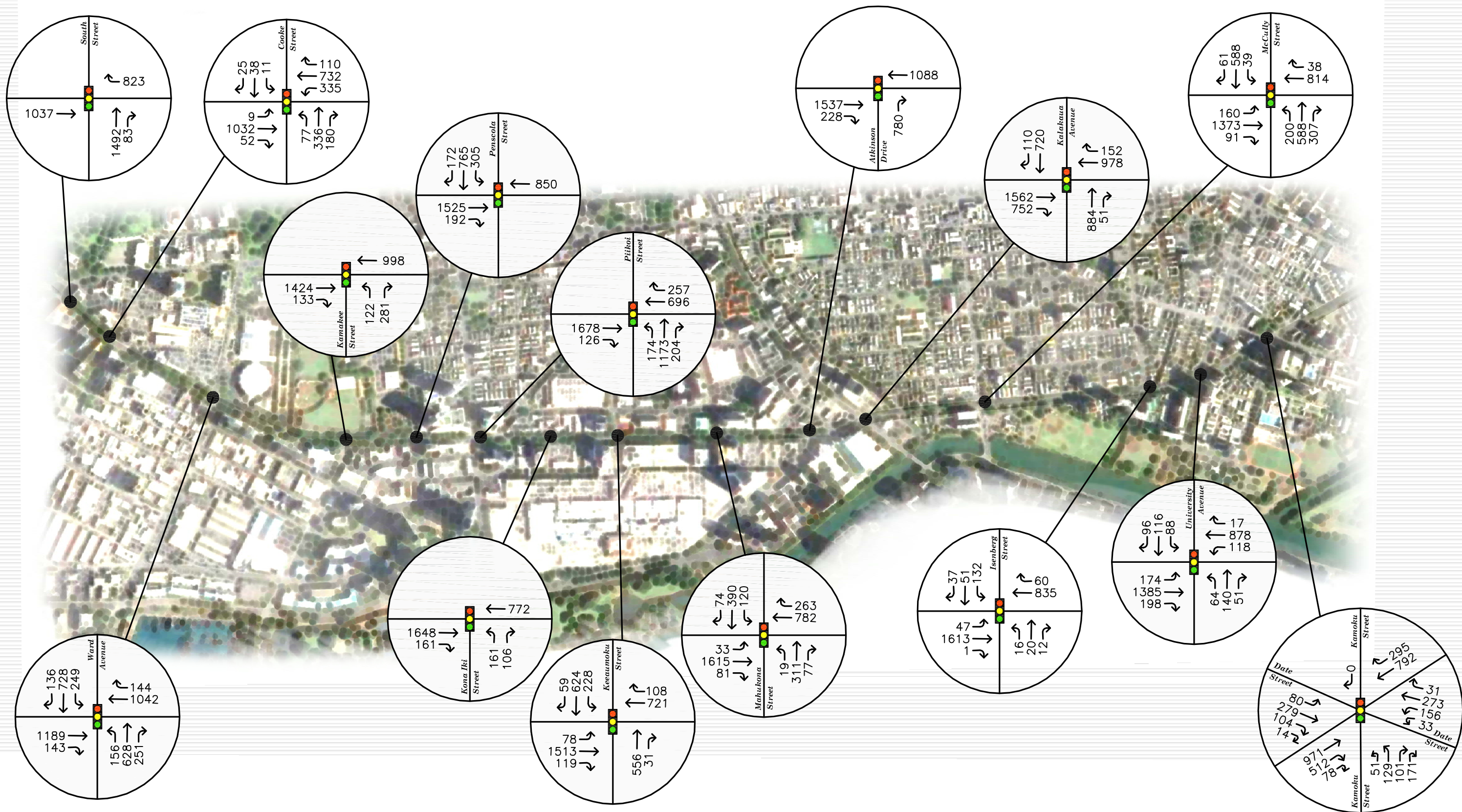
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC  
KAPIOLANI BOULEVARD

FIGURE

11





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING PM PEAK HOUR OF TRAFFIC  
KAPIOLANI BOULEVARD

FIGURE

12

**Table 1: Kapiolani Boulevard Traffic Volumes (Cont'd)**

Segment	AM Peak Hour		PM Peak Hour	
	EB	WB	EB	WB
Kamakee St to Pensacola St	680 27%	<b>1,800</b> <b>73%</b>	<b>1,710</b> <b>63%</b>	1,010 37%
Pensacola St to Piikoi St	790 33%	<b>1,610</b> <b>67%</b>	<b>1,820</b> <b>68%</b>	860 32%
Piikoi St to Kona Iki St	780 30%	<b>1,780</b> <b>70%</b>	<b>1,850</b> <b>66%</b>	940 34%
Kona Iki St to Keeaumoku St	620 26%	<b>1,750</b> <b>74%</b>	<b>1,730</b> <b>69%</b>	780 31%
Keeaumoku St to Kaheka St- Mahukona St	600 25%	<b>1,780</b> <b>75%</b>	<b>1,750</b> <b>67%</b>	850 33%
Kaheka St-Mahukona St to Atkinson Dr	630 26%	<b>1,810</b> <b>74%</b>	<b>1,790</b> <b>63%</b>	1,070 37%
Atkinson Dr to Kalakaua Ave	800 23%	<b>2,750</b> <b>77%</b>	<b>2,320</b> <b>68%</b>	1,090 32%
Kalakaua Ave to McCully St	430 15%	<b>2,430</b> <b>85%</b>	<b>1,620</b> <b>60%</b>	1,100 40%
McCully St to Isenberg St	670 21%	<b>2,560</b> <b>79%</b>	<b>1,690</b> <b>66%</b>	870 34%
Isenberg St to University Ave	730 22%	<b>2,540</b> <b>78%</b>	<b>1,760</b> <b>64%</b>	970 36%
University Ave to Date St- Kamoku St	680 21%	<b>2,610</b> <b>79%</b>	<b>1,540</b> <b>59%</b>	1,060 41%
East of Date St-Kamoku St	580 19%	<b>2,520</b> <b>81%</b>	<b>1,180</b> <b>52%</b>	1,090 48%

Notes: EB = Eastbound; WB = Westbound (rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)

An assessment of the directional splits along Kapiolani Boulevard during the peak periods indicates an approximately 30%/70% split in the eastbound/westbound directions. During the PM peak period, the directional split is approximately 70%/30% in the eastbound/westbound directions.

**b. Ward Avenue**

Along Ward Avenue, the morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM, while the afternoon peak hour of traffic generally occurs between 4:30 PM and 5:30 PM. The existing AM and PM peak period traffic volumes along Ward Avenue are shown in Figures 13 and 14, and summarized in Table 2.

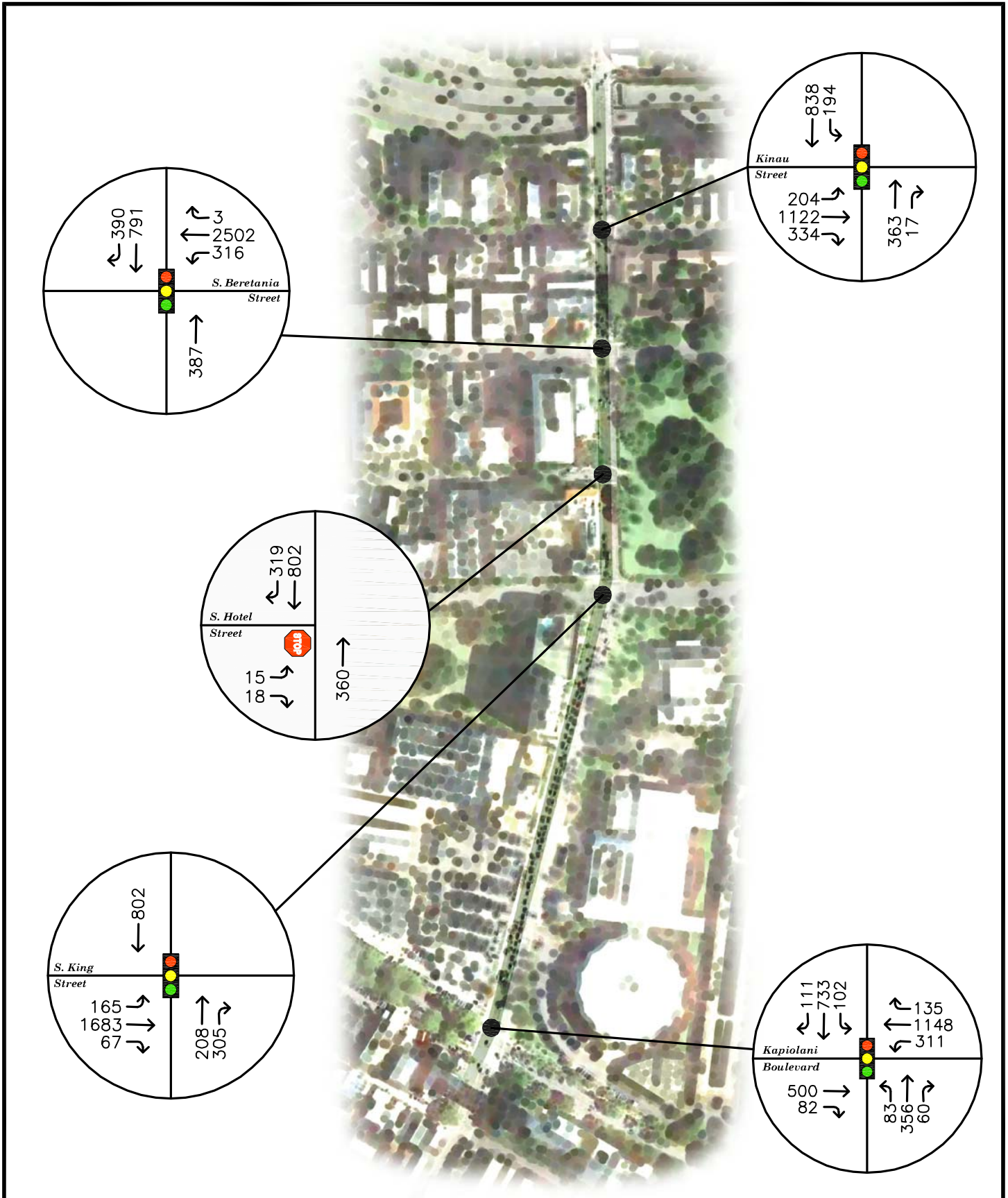
**Table 2: Ward Avenue Traffic Volumes**

Segment	AM Peak Hour		PM Peak Hour	
	NB	SB	NB	SB
North of Kinau St	570 36%	<b>1,030</b> <b>64%</b>	<b>1,280</b> <b>72%</b>	490 28%
Kinau St to Beretania St	390 25%	<b>1,180</b> <b>75%</b>	<b>940</b> <b>54%</b>	790 46%
Beretania St to Hotel St	380 26%	<b>1,110</b> <b>74%</b>	710 42%	<b>970</b> <b>58%</b>
Hotel St to King St	370 31%	<b>810</b> <b>69%</b>	610 40%	<b>920</b> <b>60%</b>
King St to Kapiolani Blvd	500 35%	<b>910</b> <b>65%</b>	720 40%	<b>1,060</b> <b>60%</b>
South of Kapiolani Blvd	500 31%	<b>1,130</b> <b>69%</b>	<b>1,040</b> <b>54%</b>	870 46%

Notes: NB = Northbound; SB = Southbound (rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)

An assessment of the directional splits along that Ward Avenue during the peak periods indicates an approximately 30%/70% split in the northbound/southbound directions during the AM peak period. During the PM peak period, the predominant direction of traffic seems to be away from South Beretania Street with an approximately 40%/60% directional split between Kapiolani Boulevard and South Beretania Street in the northbound/southbound directions.

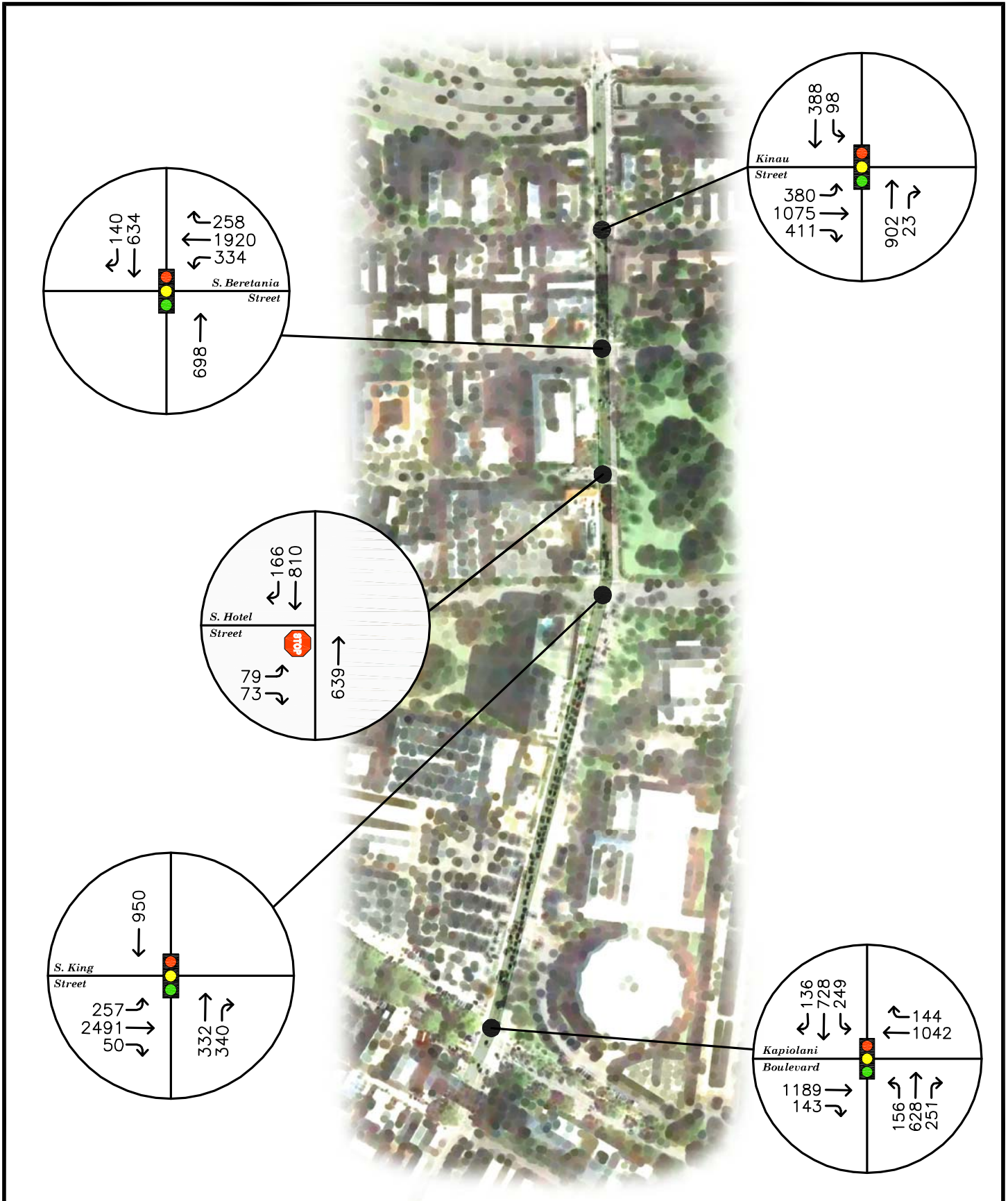




CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING AM PEAK HOUR OF TRAFFIC  
 WARD AVENUE

FIGURE  
 13





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING PM PEAK HOUR OF TRAFFIC  
 WARD AVENUE

FIGURE  
 14

**c. Atkinson Drive**

Along Atkinson Drive, the morning peak hour of traffic generally occurs between 7:30 AM and 8:30 AM, while the afternoon peak hour of traffic generally occurs between 4:15 PM and 5:15 PM. The existing AM and PM peak period traffic volumes along Atkinson Drive are shown in Figures 15 and 16, and summarized in Table 3.

**Table 3: Atkinson Drive Traffic Volumes**

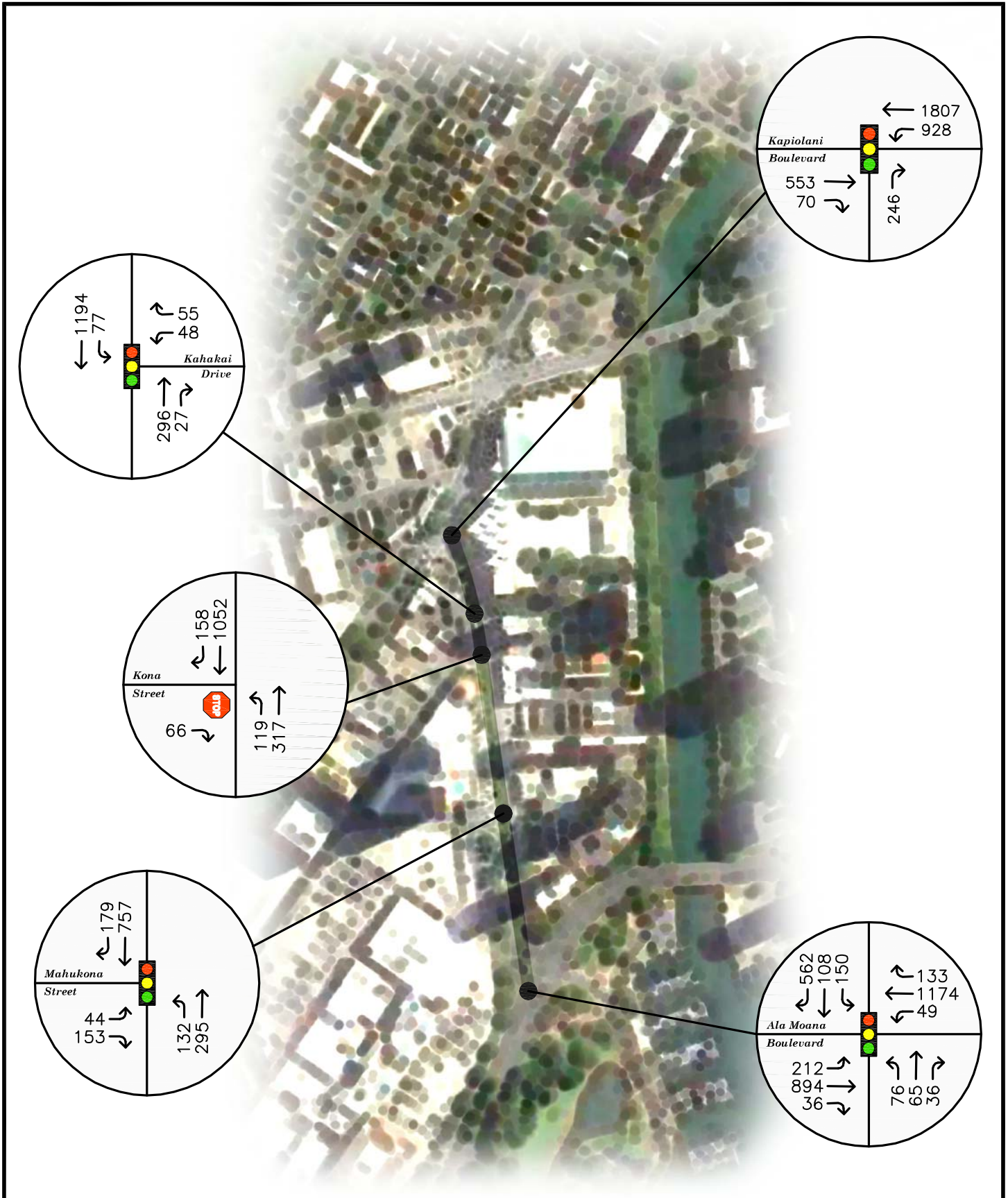
Segment	AM Peak Hour		PM Peak Hour	
	NB	SB	NB	SB
Kapiolani Blvd to Kahakai St	300 21%	<b>1,130</b> <b>79%</b>	<b>800</b> <b>72%</b>	310 28%
Kahakai St to Kona St	320 21%	<b>1,230</b> <b>79%</b>	<b>740</b> <b>59%</b>	520 41%
Kona St to Mahukona St	390 27%	<b>1,030</b> <b>73%</b>	<b>850</b> <b>65%</b>	450 35%
Mahukona St to Ala Moana Blvd	420 33%	<b>870</b> <b>67%</b>	<b>750</b> <b>56%</b>	580 44%

Notes: NB = Northbound; SB = Southbound (rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)

An assessment of the directional splits along that Atkinson Drive during the peak periods indicates an approximately 20%/80% split in the northbound/southbound directions between Kapiolani Boulevard and Kahakai Street during the AM peak period. During the PM peak period, the directional split is approximately 70%/30% in the northbound/southbound directions.

**d. Dillingham Boulevard**

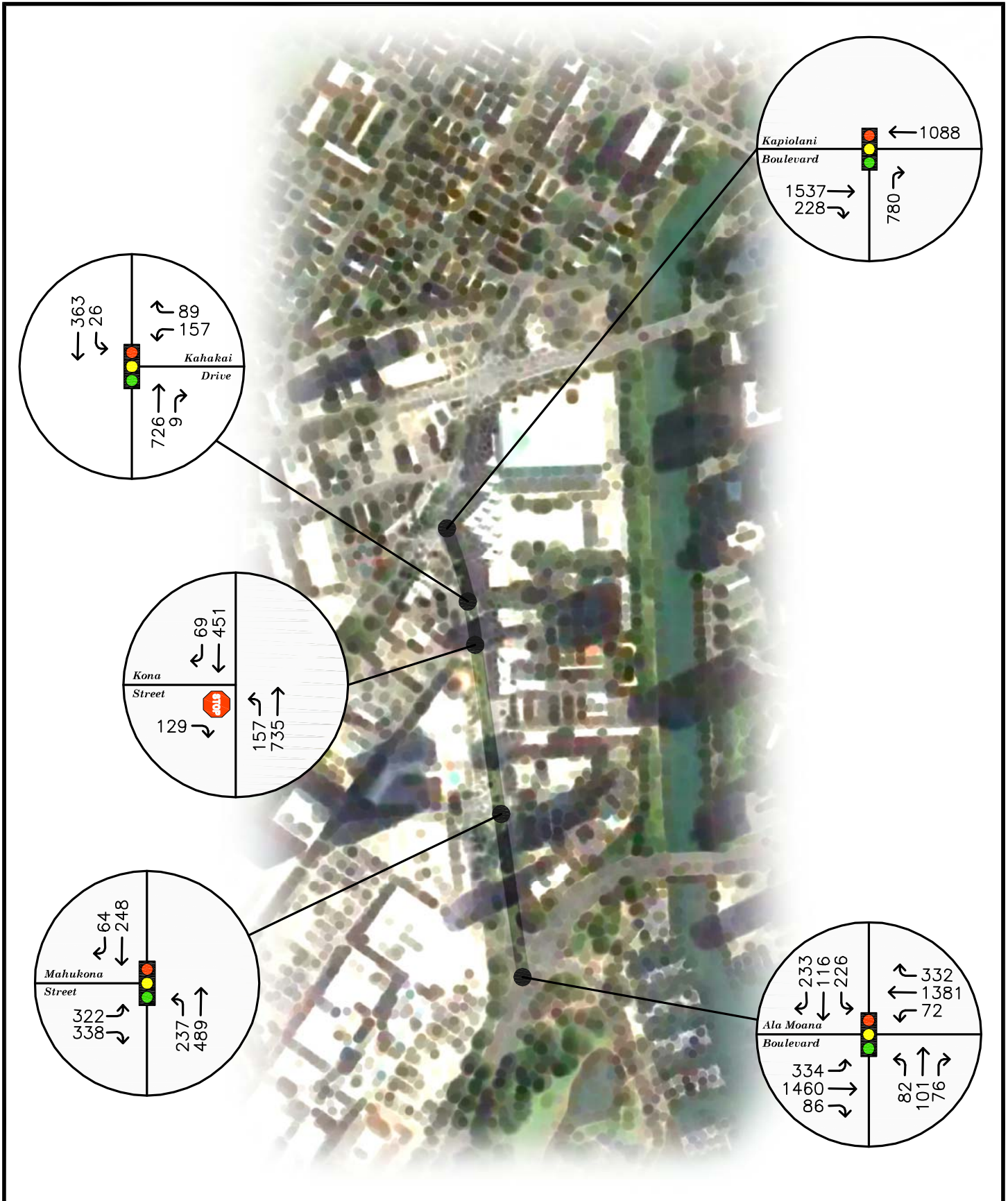
Along Dillingham Boulevard, the morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM, while the afternoon peak hour of traffic generally occurs between 3:45 PM and 4:45 PM. The existing AM and PM peak period traffic volumes along Atkinson Drive are shown in Figures 17 and 18, and summarized in Table 4.



CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING AM PEAK HOUR OF TRAFFIC  
 ATKINSON DRIVE

FIGURE  
 15





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING PM PEAK HOUR OF TRAFFIC  
 ATKINSON DRIVE

FIGURE  
 16





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC  
DILLINGHAM BOULEVARD

FIGURE

17







**Table 4: Dillingham Boulevard Traffic Volumes**

Segment	AM Peak Hour		PM Peak Hour	
	EB	WB	EB	WB
West of Middle St	<b>2,380</b> 78%	680 22%	1,350 46%	<b>1,570</b> 54%
Middle St to Laumaka St	<b>2,400</b> 79%	640 21%	<b>1,620</b> 56%	1,270 54%
Laumaka St to Puuhale Rd	<b>2,240</b> 74%	780 26%	<b>1,650</b> 55%	1,340 45%
Puuhale Rd to Mokauea St	<b>1,530</b> 72%	600 28%	<b>1,420</b> 58%	1,040 42%
Mokauea St to Kalihi St	<b>1,600</b> 75%	520 25%	<b>1,440</b> 59%	1,020 41%
Kalihi St to McNeill St	<b>1,570</b> 67%	770 33%	<b>1,320</b> 52%	1,200 48%
McNeill St to Waiakamilo Rd	<b>1,560</b> 70%	670 30%	<b>1,110</b> 52%	1,040 48%
Waikamilo Rd to Kohou St	<b>1,350</b> 69%	600 31%	<b>1,100</b> 50%	1,090 50%
Kohou St to Kokea St	<b>1,320</b> 67%	660 33%	<b>1,300</b> 53%	1,160 47%
Kokea St to Alakawa St	<b>1,310</b> 64%	750 36%	<b>1,310</b> 51%	1,250 49%
Alakawa St to Costco Dwy	<b>1,120</b> 60%	760 40%	<b>1,200</b> 55%	1,000 45%
Costco Dwy to Akepo St	<b>1,100</b> 58%	810 42%	<b>1,330</b> 54%	1,140 46%
Akepo St to Kaaahi St	<b>1,100</b> 60%	720 40%	<b>1,330</b> 56%	1,040 44%
Kaaahi St to King St-Liliha St	<b>1,070</b> 58%	780 42%	<b>1,390</b> 57%	1,040 43%
East of King St-Liliha St	460 41%	<b>660</b> 59%	<b>780</b> 62%	480 38%

Notes: EB = Eastbound; WB = Westbound (rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)

An assessment of the directional splits along Dillingham Boulevard during the peak periods indicates an approximately 70%/30% split in the eastbound/westbound directions. During the PM

peak period, the directional split is approximately 50%/50% in the eastbound/westbound directions.

**e. Kalihi Street**

Along Kalihi Street, the morning peak hour of traffic generally occurs between 7:45 AM and 8:45 AM, while the afternoon peak hour of traffic generally occurs between 4:30 PM and 5:30 PM. The existing AM and PM peak period traffic volumes along Kalihi Street are shown in Figures 19 and 20, and summarized in Table 5.

**Table 5: Kalihi Street Traffic Volumes**

Segment	AM Peak Hour		PM Peak Hour	
	NB	SB	NB	SB
North of Beckley St	<b>990</b> <b>66%</b>	520 34%	<b>1,550</b> <b>82%</b>	340 18%
Beckley St to King St	<b>720</b> <b>56%</b>	570 46%	<b>1,330</b> <b>79%</b>	350 21%
King St to Kaumualii St	430 47%	<b>490</b> <b>53%</b>	<b>820</b> <b>71%</b>	340 29%
Kaumualii St to Dillingham Blvd	400 48%	<b>440</b> <b>52%</b>	<b>850</b> <b>71%</b>	350 29%
Dillingham Blvd to Nimitz Hwy	270 34%	<b>530</b> <b>66%</b>	<b>510</b> <b>59%</b>	360 41%

Notes: NB = Northbound; SB = Southbound(rounded volumes expressed in vehicles per hour); **Bold** text indicates peak direction of traffic (directional split expressed in %)

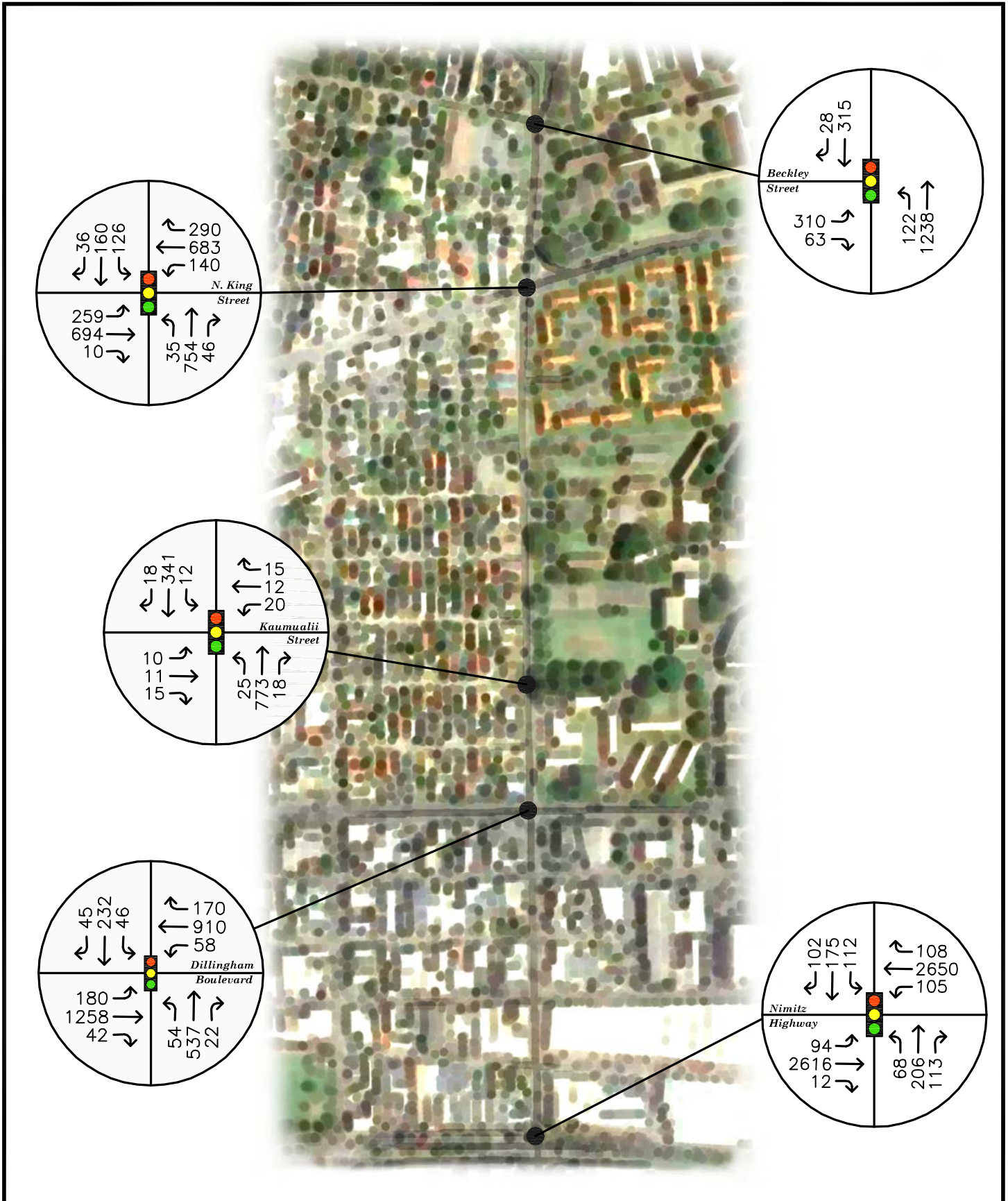
An assessment of the directional splits along Kalihi Street during the peak periods indicates the predominant direction of traffic seems to be away from North King Street with an approximately 50%/50% directional split in the northbound/southbound directions between King Street and Dillingham Boulevard. During the PM peak period, the directional split is approximately 70%/30% in the northbound/southbound directions between King Street and Dillingham Boulevard.





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING AM PEAK HOUR OF TRAFFIC  
 KALIHI STREET

FIGURE  
 19



CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS  
 EXISTING PM PEAK HOUR OF TRAFFIC  
 KALIHI STREET

FIGURE  
 20

**III. EXISTING CONTRA-FLOW OPERATIONS**

**A. General**

There are currently three corridors within the City and County of Honolulu’s jurisdiction where contra-flow operations have been implemented. These corridors are Kapiolani Boulevard, Ward Avenue, and Atkinson Drive. Each of these corridors was assessed to determine whether modifications should be made to the existing operations or if the current operations should be terminated. The following sections provide a summary of these assessments.

**B. Kapiolani Boulevard**

As previously discussed, Kapiolani Boulevard has contra-flow operations implemented along its alignment during the AM and PM peak periods. During the AM peak period, these operations extend between South Street and east of Date Street/Kamoku Street and between Ward Avenue and east of McCully Street during the PM peak period. The AM and PM peak period traffic operating conditions with and without the existing contra-flow operations were compared to determine if modifications to the existing operations should be made. These conditions are summarized in Tables 6 and 7, and LOS calculations are included in Appendix C.

**Table 6: With and Without Contra-Flow Operations Along Kapiolani Boulevard AM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Operations			Without Contra-flow Operations		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/South St	10.7/B	7.8/A	8.8/A	10.7/B	7.8/A	8.8/A
Kapiolani Blvd/Cooke St	10.8/B	14.0/B	8.1/A	15.2/B	25.9/C	7.4/A
Kapiolani Blvd/Ward Ave	35.4/D	42.4/D	26.4/C	35.4/D	37.6/D	31.0/C
Kapiolani Blvd/Kamakee St	13.5/B	10.5/B	14.2/B	14.4/B	8.4/A	16.0/B
Kapiolani Blvd/Pensacola St	18.8/B	14.1/B	17.4/B	21.2/C	11.5/B	19.0/B
Kapiolani Blvd/Piikoi St	13.7/B	9.0/A	10.5/B	15.3/B	7.3/A	11.6/B
Kapiolani Blvd/Kona Iki St	3.8/A	3.0/A	3.4/A	3.9/A	2.5/A	3.7/A
Kapiolani Blvd/Keeaumoku St	18.0/B	15.5/B	18.4/B	18.6/B	13.0/B	18.9/B

Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
 Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service



**Table 6: With and Without Contra-Flow Operations Along Kapiolani Boulevard  
AM Peak Hour Traffic Operating Conditions (Cont'd)**

Intersection	Existing Contra-flow Operations			Without Contra-flow Operations		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/Kaheka St- Mahukona St	14.8/B	11.7/B	14.4/B	15.9/B	9.9/A	15.5/B
Kapiolani Blvd/Atkinson Dr	4.6/A	14.2/B	1.7/A	4.8/A	8.4/A	1.6/A
Kapiolani Blvd/ Kalakaua Ave	34.5/C	17.6/B	33.1/C	44.2/D	15.4/B	47.8/D
Kapiolani Blvd/McCully St	34.9/C	38.2/D	28.3/C	39.0/D	35.0/D	33.7/C
Kapiolani Blvd/Isenberg St	7.2/A	3.6/A	4.9/A	10.3/B	4.7/A	8.8/A
Kapiolani Blvd/ University Ave	51.2/D	54.2/D	45.4/D	76.7/E	58.7/E	81.8/F
Kapiolani Blvd/Date St/ Kamoku St	58.7/E	29.4/C	52.9/D	58.3/E	26.4/C	52.9/D

INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

**Table 7: With and Without Contra-Flow Operations Along Kapiolani Boulevard  
PM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Operations			Without Contra-flow Operations		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/South St	19.4/B	17.2/B	17.9/B	19.4/B	17.2/B	17.9/B
Kapiolani Blvd/Cooke St	21.8/C	27.0/C	11.5/B	21.8/C	27.0/C	11.5/B
Kapiolani Blvd/Ward Ave	32.0/C	29.2/C	27.4/C	32.0/C	29.2/C	27.4/C
Kapiolani Blvd/Kamakee St	14.4/B	13.7/B	15.1/B	14.3/B	14.7/B	12.1/B
Kapiolani Blvd/Pensacola St	16.4/B	14.9/B	14.3/B	17.7/B	16.0/B	12.0/B
Kapiolani Blvd/Piikoi St	19.8/B	18.2/B	18.3/B	21.0/C	19.2/B	14.4/B
Kapiolani Blvd/Kona Iki St	13.3/B	13.2/B	12.0/B	13.7/B	14.0/B	10.1/B
Kapiolani Blvd/Keeaumoku St	21.3/C	20.1/C	16.9/B	23.6/C	22.1/C	13.8/B

Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

**Table 7: With and Without Contra-Flow Operations Along Kapiolani Boulevard PM Peak Hour Traffic Operating Conditions (Cont'd)**

Intersection	Existing Contra-flow Operations			Without Contra-flow Operations		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/Kaheka St-Mahukona St	17.2/B	15.7/B	15.7/B	18.4/B	17.7/B	12.5/B
Kapiolani Blvd/Atkinson Dr	15.2/B	13.7/B	14.8/B	15.7/B	14.8/B	11.8/B
Kapiolani Blvd/Kalakaua Ave	22.1/C	17.6/B	18.0/B	23.4/C	19.5/B	15.0/B
Kapiolani Blvd/McCully St	36.2/D	27.8/C	43.6/D	33.7/C	29.3/C	39.3/D
Kapiolani Blvd/Isenberg St	9.8/A	9.0/A	7.3/A	9.8/A	9.0/A	7.3/A
Kapiolani Blvd/University Ave	29.6/C	27.7/C	26.1/C	29.6/C	27.7/C	26.1/C
Kapiolani Blvd/Date St/Kamoku St	49.3/D	46.2/D	36.5/D	49.3/D	46.2/D	36.5/D

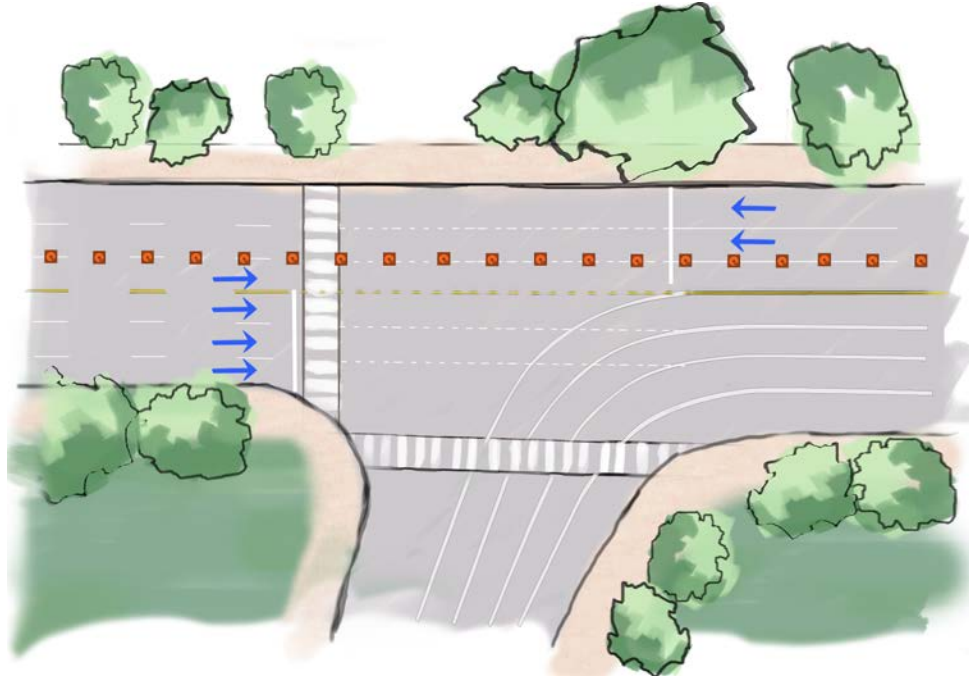
Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
 Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

Currently, the study intersections along Kapiolani Boulevard operate at LOS “D” or better during the AM and PM peak periods with the exception of the intersection with Date Street and Kamoku Street which operates at LOS “E” during the AM peak period. It should be noted that traffic operations at the intersection of Kapiolani Boulevard with Date Street and Kamoku Street are influenced by traffic from the nearby Iolani School and Ala Wai Elementary School especially during the AM peak period. As previously discussed, the directional splits along Kapiolani Boulevard are approximately 30%/70% split in the eastbound/westbound directions during the AM peak period and approximately 70%/30% in the eastbound/westbound directions during the PM peak period. The existing contra-flow operations along Kapiolani Boulevard seem appropriate to accommodate the predominant direction of traffic during the peak periods with an additional westbound lane provided during the AM peak period and additional eastbound lane provided during the PM peak period. The removal of the existing contra-flow operations along Kapiolani Boulevard are generally expected to result in a deterioration of traffic operations at the study intersections during both peak periods with an increase in travel times of

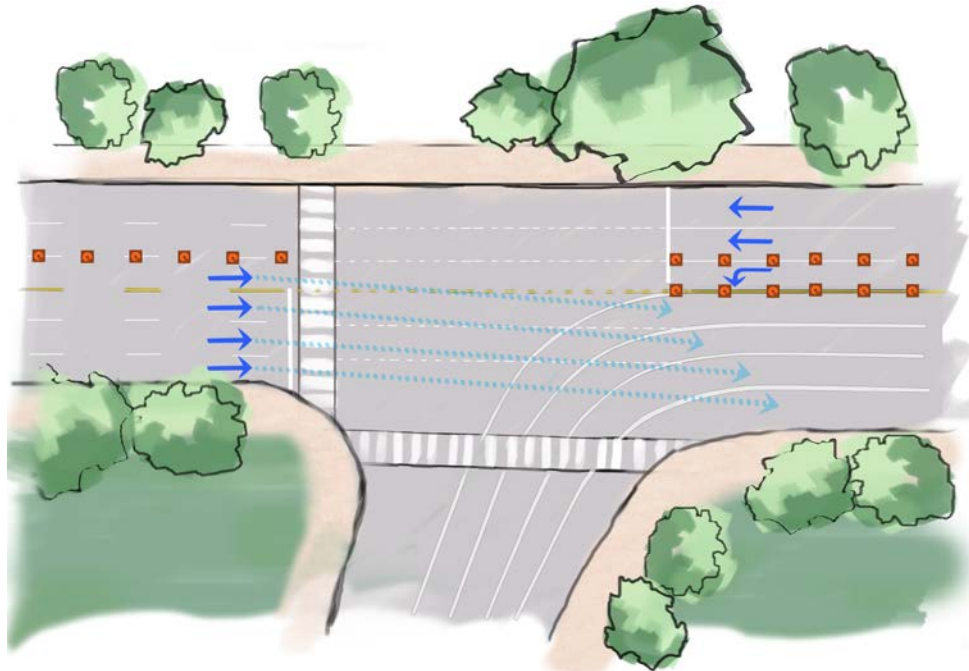
approximately 15% for westbound traffic during the AM peak period and approximately 5% for eastbound traffic during the PM peak period. As such, removal of the existing contra-flow operations is not recommended. In addition to the complete removal of the existing operations, modifications to the existing contra-flow operations were explored to determine if improvements could be made to the existing conditions. There were two modification alternatives considered for the purpose of this study. First, modifications to the existing turning restrictions at the intersections along Kapiolani Boulevard during the AM and PM peak periods. Second, extension of contra-flow operations further west and east during the PM peak period.

Currently, left-turn traffic movements are restricted along most of the intersections along Kapiolani Boulevard during the AM and PM peak periods while contra-flow operations are in place. The provision of additional through lanes along the roadway during contra-flow operations would make conflicting turning movements more difficult and potentially unsafe. As such, the prohibition of these movements provides a safer environment although it requires drivers to alter their routes to reach their destinations. In addition, to facilitate turning movements during peak periods, additional green time would need to be reallocated from the through traffic movement thereby increasing delay for through traffic along Kapiolani Boulevard. The intersection of Kapiolani Boulevard with Atkinson Drive was assessed more in depth to determine if left-turns from Kapiolani Boulevard to Atkinson Drive should be provided during the PM peak period. Currently, cones are placed along Kapiolani Boulevard through the intersection with Atkinson Drive to allocate two lanes for through westbound traffic and four lanes for eastbound traffic as shown in the typical intersection configuration below. To allow left-turn traffic movements from Kapiolani Boulevard to Atkinson Drive, a third lane would need to be allocated to westbound traffic as a turning bay and the four eastbound lanes west of the intersection would be offset by approximately 10' from the receiving lanes east of the intersection as shown below in the modified intersection configuration with a left-turn bay.





*Kapiolani Boulevard and Atkinson Drive PM Peak Period Typical Intersection Configuration*



*Kapiolani Boulevard and Atkinson Drive PM Peak Period Modified Intersection Configuration With Left-Turn Bay*

Without the provision of additional guidance across the intersection (i.e., cones, delineators, or striping), the 10' offset may not be apparent to all drivers resulting in conflicts with adjacent eastbound vehicles within the intersection. In addition, the

outermost lane east of the intersection is a dedicated turning lane that originates at Atkinson Drive to facilitate right-turns onto Kapiolani Boulevard and terminates as a dedicated right-turn lane at Kalakaua Avenue. If this lane was utilized for through traffic, a high percentage of the vehicles within the outermost lane would need to merge left to continue along Kapiolani Boulevard east of Kalakaua Avenue. As such, the elimination of existing turning restrictions during AM and PM contra-flow operations including the turning restriction at Atkinson Drive during the PM peak period is not recommended.

In addition, consideration was given to the extension of existing contra-flow operations further west and east during the PM peak period. The extension of contra-flow operations further west to Cooke Street during the PM peak period would either require the prohibition of westbound left-turns from Kapiolani Boulevard to Cooke Street, sharing of one of the through lanes with left-turn traffic movements, or allocation of one of the through lanes as a left-turn lane. Due to the high volume of left-turning vehicles at this intersection, the westbound approach was assumed to be modified to provide an exclusive left-turn lane and one through lane. To the east, the eastbound contra-flow lane is assumed to be located on the north side of the raised median east of McCully Street and is expected to terminate at University Avenue. The lane is not expected to extend beyond University Avenue due to the double left-turn from Kamoku Street onto Kapiolani Boulevard. The PM peak period traffic operating conditions with the extension of contra-flow operations are summarized in Table 8 and LOS calculations are included in Appendix C. The existing PM peak hour traffic conditions are provided for comparison purposes.

**Table 8: Existing and Extended Contra-Flow Operations Along Kapiolani Boulevard PM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Conditions			Extended Contra-flow Conditions		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/South St	19.4/B	17.2/B	17.9/B	19.4/B	17.2/B	17.9/B
Kapiolani Blvd/Cooke St	21.8/C	27.0/C	11.5/B	20.5/C	21.9/C	15.8/B

**Table 8: Existing and Extended Contra-Flow Operations Along Kapiolani Boulevard PM Peak Hour Traffic Operating Conditions (Cont'd)**

Intersection	Existing Contra-flow Conditions			Extended Contra-flow Conditions		
	INT	EB	WB	INT	EB	WB
Kapiolani Blvd/Ward Ave	32.0/C	29.2/C	27.4/C	34.7/C	24.5/C	35.6/D
Kapiolani Blvd/Kamakee St*	14.4/B	13.7/B	15.1/B	14.4/B	13.7/B	15.1/B
Kapiolani Blvd/Pensacola St*	16.4/B	14.9/B	14.3/B	16.4/B	14.9/B	14.3/B
Kapiolani Blvd/Piikoi St*	19.8/B	18.2/B	18.3/B	19.8/B	18.2/B	18.3/B
Kapiolani Blvd/Kona Iki St*	13.3/B	13.2/B	12.0/B	13.3/B	13.2/B	12.0/B
Kapiolani Blvd/Keeaumoku St*	21.3/C	20.1/C	16.9/B	21.3/C	20.1/C	16.9/B
Kapiolani Blvd/Kaheka St-Mahukona St*	17.2/B	15.7/B	15.7/B	17.2/B	15.7/B	15.7/B
Kapiolani Blvd/Atkinson Dr*	15.2/B	13.7/B	14.8/B	15.2/B	13.7/B	14.8/B
Kapiolani Blvd/Kalakaua Ave*	22.1/C	17.6/B	18.0/B	22.1/C	17.6/B	18.0/B
Kapiolani Blvd/McCully St	36.2/D	27.8/C	43.6/D	35.4/D	25.8/C	43.6/D
Kapiolani Blvd/Isenberg St	9.8/A	9.0/A	7.3/A	9.7/A	8.7/A	8.7/A
Kapiolani Blvd/University Ave	29.6/C	27.7/C	26.1/C	39.9/D	28.7/C	48.6/D
Kapiolani Blvd/Date St/Kamoku St	49.3/D	46.2/D	36.5/D	47.0/D	42.0/D	43.4/D

\*No lane configurations changes expected.

Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

The extension of contra-flow operations further west and east along Kapiolani Boulevard is generally expected to result in a deterioration of traffic operations at the affected study intersections. As such, the extension of contra-flow operations during the PM peak period is not recommended.

**C. Ward Avenue**

As previously discussed, Ward Avenue has contra-flow operations implemented along its alignment during the AM peak period between Kinau Street and South King Street. The AM peak period traffic operating conditions with and without the existing contra-flow operations within this section were compared to determine if modifications to the existing operations should be made during this peak



period. These conditions are summarized in Table 9 and LOS calculations are included in Appendix D.

**Table 9: With and Without Contra-Flow Operations Along Ward Avenue AM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Conditions			Without Contra-flow Conditions		
	INT	NB	SB	INT	NB	SB
Ward Ave/Kinau St	19.7/B	31.2/C	19.6/B	23.1/C	32.6/C	18.3/B
Ward Ave/Beretania St	18.1/B	19.4/B	19.8/B	18.3/B	16.5/B	21.1/C
Ward Ave/King St	15.9/B	19.1/B	17.3/B	16.5/B	17.7/B	19.4/B
Ward Ave/Kapiolani Blvd	35.4/D	36.0/D	45.8/D	35.4/D	33.7/C	42.2/D

Notes: INT. = Intersection Average; NB = Northbound Approach; SB = Southbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

Currently, the study intersections along Ward Avenue operate at LOS “B” during the AM peak period with the exception of the intersection with Kapiolani Boulevard which operates at LOS “D.” As previously discussed, the directional split along Ward Avenue during the peak periods indicates an approximately 30%/70% split in the northbound/southbound directions during the AM peak period. As such, the existing contra-flow operations along that roadway seem appropriate to accommodate the predominant direction of traffic with an additional southbound lane provided during the AM peak period. The removal of the existing contra-flow operations along Ward Avenue during the AM peak period is generally expected to result in a deterioration of traffic operations at the study intersections with an increase in travel times of approximately 30% for southbound traffic. As such, removal of the existing contra-flow operations is not recommended. In addition to the complete removal of the existing operations, modifications to the existing contra-flow configuration were explored to determine if improvements could be made to the existing operations. Left-turn traffic movements along Ward Avenue are already prohibited at Hotel Street (during the AM and PM peak periods) and South King Street so additional turning restrictions were not considered. However, the implementation of contra-flow operations between Kinau Street and Kapiolani Boulevard during the PM peak period was considered.

The directional split along Ward Avenue during the PM peak period seems to be away from South Beretania Street with an approximately 40%/60% directional split between Kapiolani Boulevard and South Beretania Street in the northbound/southbound directions. As such, consideration was given to the implementation of a southbound contra-flow lane along Ward Avenue between South Beretania Street and Kapiolani Boulevard. The PM peak period traffic operating conditions without and with contra-flow operations within this section were compared to determine if contra-flow operations should be implemented. These conditions are summarized in Table 10 and LOS calculations are included in Appendix D.

**Table 10: Without and With Contra-Flow Operations Along Ward Avenue PM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Conditions			With Contra-flow Conditions		
	INT	NB	SB	INT	NB	SB
Ward Ave/Beretania St	15.6/B	26.0/C	24.0/C	20.0/C	26.2/C	13.5/B
Ward Ave/King St	18.8/B	19.2/B	23.6/C	17.4/B	22.6/C	21.6/C
Ward Ave/Kapiolani Blvd	32.0/C	35.8/D	36.9/D	34.7/C	40.4/D	40.7/C

Notes: INT = Intersection Average; NB = Northbound Approach; SB = Southbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

The implementation of contra-flow operations along Ward Avenue during the PM peak period to provide an additional southbound lane between South Beretania Street and Kapiolani Boulevard is generally expected to result in a deterioration of traffic operations at the affected study intersections. As such, the implementation of contra-flow operations during this period is not recommended.

**D. Atkinson Drive**

As previously discussed, Atkinson Drive has contra-flow operations implemented along its alignment during the AM peak period between Kapiolani Boulevard and Kahakai Drive. Currently, the study intersections along Atkinson Drive operate at LOS “B” or better during the AM peak period with the exception of the intersection with Ala Moana Boulevard which operates at LOS “D.” As previously discussed, the existing contra-flow operations along this roadway are provided to facilitate the double left-turn traffic movement from Kapiolani



Boulevard. As such, the removal of these operations is not recommended without modifications to the existing contra-flow operations along Kapiolani Boulevard. In addition, modifications to the existing contra-flow configuration were explored to determine if improvements could be made to the existing operations. There were two modification alternatives considered for the purpose of this study. First, extension of the existing contra-flow operations along Atkinson Drive during the AM peak period. Second, implementation of contra-flow operations during the PM peak period.

The extension of contra-flow operations further south during the PM peak period would either require the prohibition of northbound left-turns from Atkinson Drive to Kona Street and use of the striped median north of Mahukona Street. The AM peak period traffic operating conditions with the extension of contra-flow operations are summarized in Table 11 and LOS calculations are included in Appendix E. The existing AM peak hour traffic conditions are provided for comparison purposes.

**Table 11: Existing and Extended Contra-Flow Operations Along Atkinson Drive AM Peak Hour Traffic Operating Conditions**

Intersection	Existing Contra-flow Conditions			Extended Contra-flow Conditions		
	INT	NB	SB	INT	NB	SB
Atkinson Dr/Kapiolani Blvd	4.6/A	11.9/B	-	4.6/A	11.9/B	-
Atkinson Dr/Kahakai Dr	5.3/A	3.2/A	4.5/A	5.1/A	3.3/A	4.3/A
Atkinson Dr/Mahukona St	14.8/B	12.2/B	14.4/B	17.7/B	16.9/B	17.2/B
Atkinson Dr/Ala Moana Blvd	36.8/D	52.5/D	31.5/C	36.8/D	52.5/D	31.5/C

Notes: INT = Intersection Average; NB = Northbound Approach; SB = Southbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

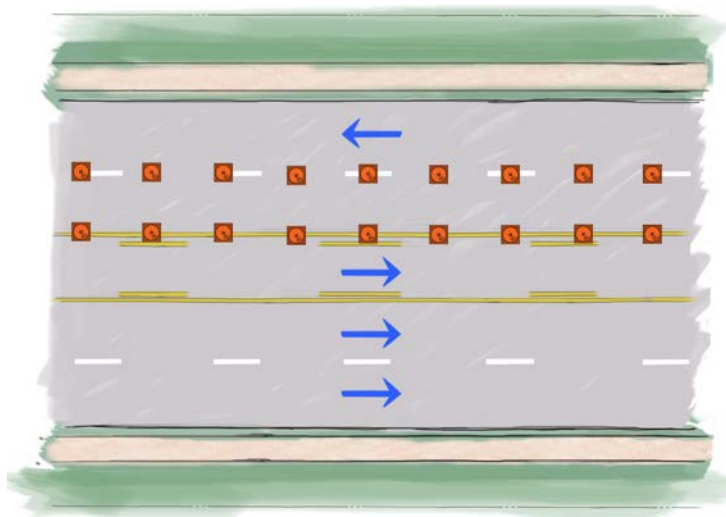
The extension of the existing contra-flow operations during the AM peak period do not significantly improve traffic operations at the study intersections along Atkinson Drive and would require restriction of turning movements along the roadway alignment limiting access to adjacent properties. As such, extension of the contra-flow operations during the AM peak period is not recommended.

In addition, consideration was given to the implementation of contra-flow operations during the PM peak period. The directional split along Atkinson Drive during the PM peak period is an approximately 70%/30% split. As such, if contra-flow operations were implemented along this roadway during the PM peak period, an additional northbound lane would accommodate the predominant direction of traffic during that period. However, at the intersection of with Kapiolani Boulevard, there are already four right-turn lanes for traffic turning onto Kapiolani Boulevard and the existing volumes are not high enough to necessitate the provision of a fifth right-turn lane. As such, the implementation of contra-flow operations during the PM peak period is not recommended.

#### **IV. PROPOSED CONTRA-FLOW OPERATIONS**

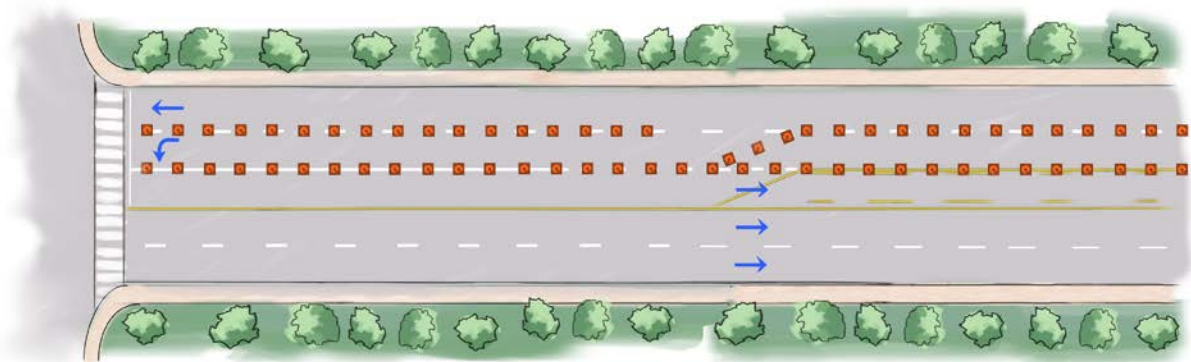
##### **A. Dillingham Boulevard**

Currently, Dillingham Boulevard does not utilize contra-flow operations along its alignment. As previously discussed, the directional split along that roadway is an approximately 70%/30% split in the eastbound/westbound directions during the AM peak period and an approximately 50%/50% split during the PM peak period. As such, the implementation of contra-flow operations during the AM peak period could facilitate eastbound traffic along Dillingham Boulevard while the lack of a predominant direction of traffic during the PM peak period indicates that contra-flow operations are not needed during that period. The assessment was focused on the section of Dillingham Boulevard between Laumaka Street and Akepo Lane since there are currently only two travel lanes within this section.



*Dillingham Boulevard AM Peak Period Typical Section*

The existing median along the roadway could be utilized for the third eastbound travel lane with the inner westbound lane used to provide exclusive left-turn lanes at intersections (see typical section above). Left-turn traffic movements would be restricted along this section of Dillingham Boulevard except at intersections during contra-flow operations (see Figure 21 and typical left-turn lane transition below). The AM peak period traffic operating conditions without and with contra-flow operations were compared to determine if contra-flow operations should be implemented and the limits of these operations if implemented. These conditions are summarized in Table 12 and LOS calculations are included in Appendix F.



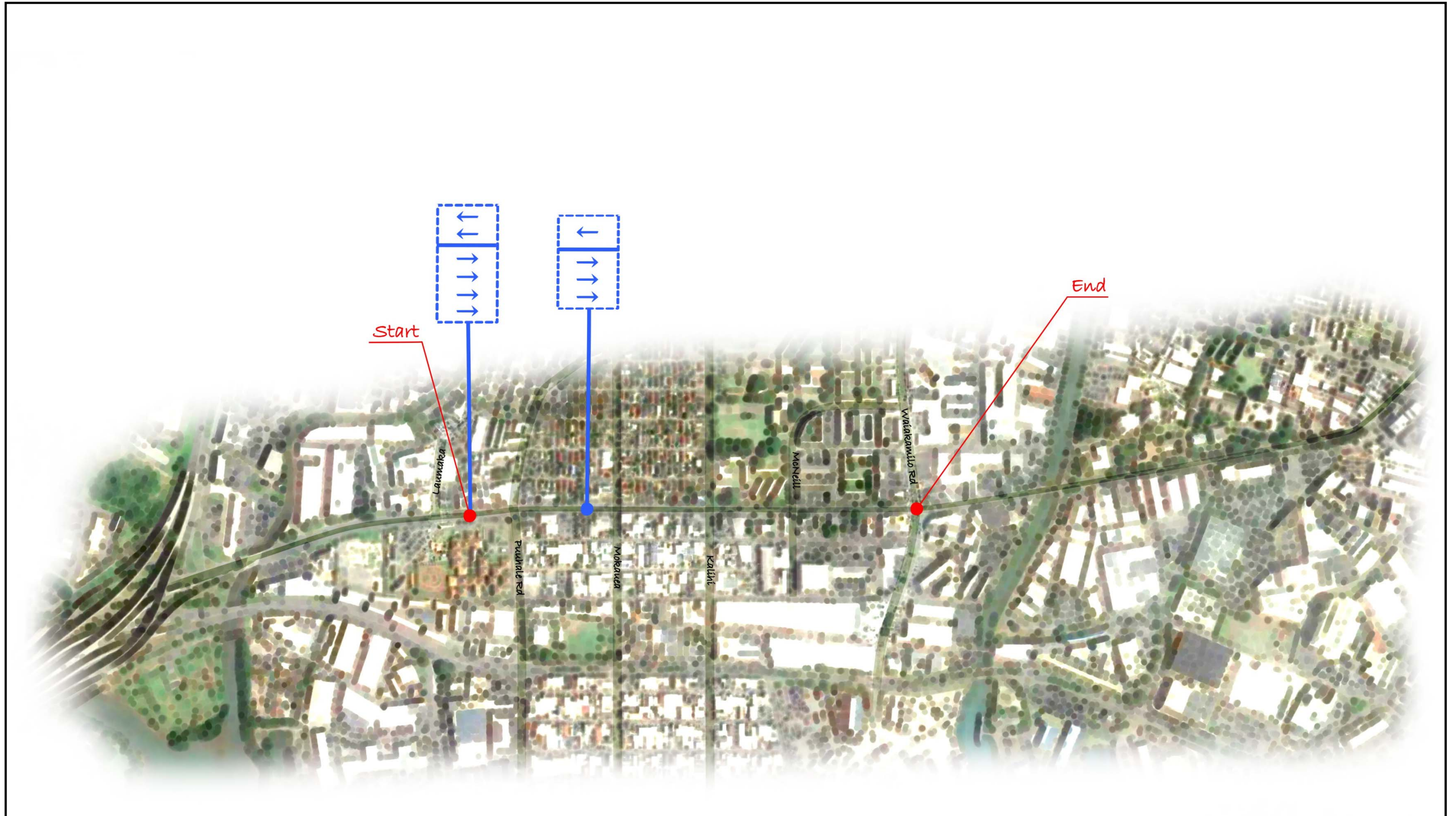
*AM Peak Period Left-Turn Lane Transition*

**Table 12: Without and With Contra-Flow Operations Along Dillingham Boulevard AM Peak Hour Traffic Operating Conditions**

Intersection	Existing Conditions			With Contra-flow Conditions		
	INT	EB	WB	INT	EB	WB
Kamehameha Hwy/Laumaka St	4.5/A	4.0/A	2.8/A	4.5/A	4.0/A	2.8/A
Dillingham Blvd/Puu hale Rd	11.3/B	9.1/A	5.8/A	10.5/B	7.9/A	7.2/A
Dillingham Blvd/Mokauea St	10.9/B	9.5/A	5.8/A	8.9/A	7.0/A	7.1/A
Dillingham Blvd/Kalihi St	30.2/C	27.5/C	22.2/C	24.2/C	20.2/C	23.1/C
Dillingham Blvd/McNeill St	9.3/A	7.8/A	4.9/A	8.7/A	6.8/A	7.9/A
Dillingham Blvd/Waiakamilo Rd	30.7/C	28.4/C	27.4/C	30.7/C	28.4/C	27.4/C

Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
 Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service;





CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

PROPOSED CONTRA-FLOW OPERATIONS  
 DILLINGHAM BOULEVARD – AM PEAK PERIOD



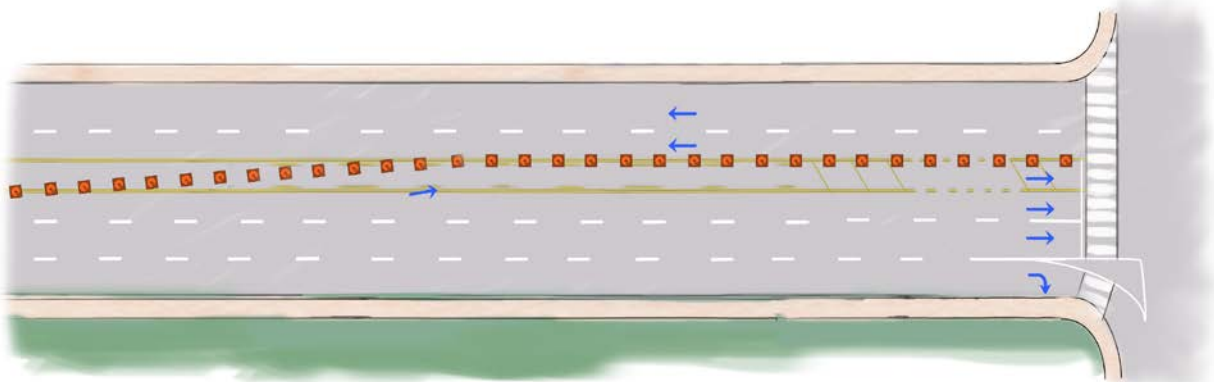
FIGURE  
 21

**Table 12: Without and With Contra-Flow Operations Along Dillingham Boulevard AM Peak Hour Traffic Operating Conditions (Cont'd)**

Intersection	Existing Conditions			With Contra-flow Conditions		
	INT	EB	WB	INT	EB	WB
Dillingham Blvd/Kohou St	7.9/A	6.7/A	5.9/A	7.9/A	6.7/A	5.9/A
Dillingham Blvd/Kokea St	10.0/A	5.8/A	14.2/B	10.0/A	5.8/A	14.2/B
Dillingham Blvd/Alakawa St	20.1/C	19.3/B	16.5/B	20.1/C	19.3/B	16.5/B
Dillingham Blvd/Costco Dwy	8.3/A	10.3/B	5.0/A	8.3/A	10.3/B	5.0/A

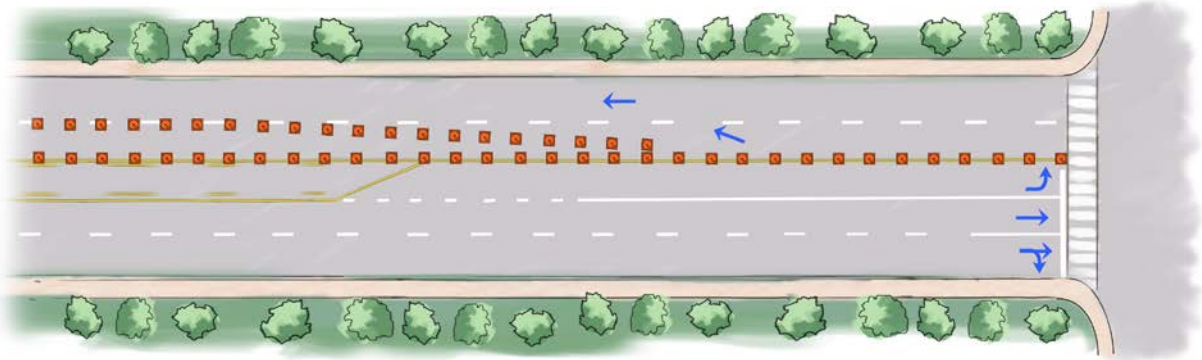
Notes: INT = Intersection Average; EB = Eastbound Approach; WB = Westbound Approach  
 Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service;

The implementation of contra-flow operations during the AM peak period is expected to improve traffic operations at the study intersections along Dillingham Boulevard between Laumaka Street and Waiakamilo Road with a decrease in travel times of approximately 5% for eastbound traffic. It should be noted that traffic operations at the intersections with Kohou Street and Kokea Street are expected to deteriorate if contra-flow operations are extended further east. In addition, the transition of the laneage between the contra-flow and non-contra-flow sections is fairly intuitive for drivers if located just west of Puuhale Road and at Waiakamilo Road (see the following transition sections). As such, it is recommended that contra-flow operations be implemented along Dillingham Boulevard between Laumaka Street and Waiakamilo Road during the AM peak period.



*AM Peak Period Laneage Transition Near Puuhale Road*



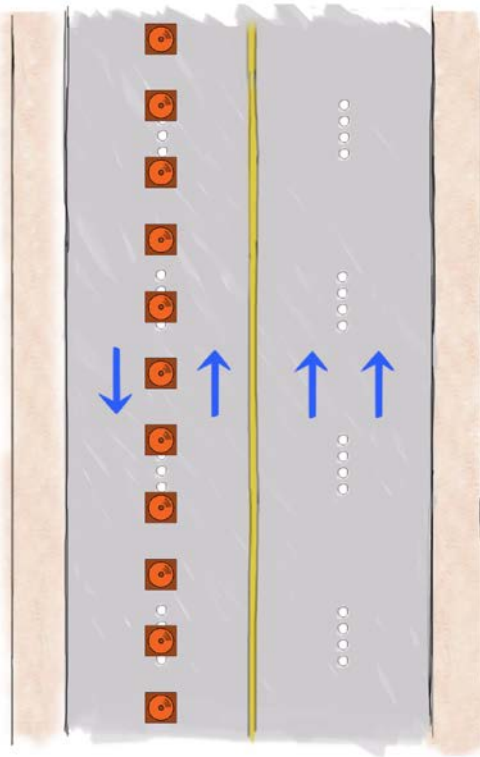


*AM Peak Period Laneage Transition at Waiakamilo Road*

**B. Kalihi Street**

Currently, Kalihi Street does not utilize contra-flow operations along its alignment. As previously discussed, the directional split along that roadway is an approximately 50%/50% split in the northbound/southbound directions between North King Street and Dillingham Boulevard during the AM peak period. During the PM peak period, the directional split is approximately 70%/30% in the northbound/southbound directions between North King Street and Dillingham Boulevard. As such, the implementation of contra-flow operations during the PM peak period could facilitate northbound traffic along Kalihi Street while the lack of a predominant direction of traffic during the AM peak period indicates that contra-flow operations are not needed during that period. The assessment was focused on the section of Kalihi Street between North King Street and Dillingham Boulevard since traffic volumes are significantly less south of Dillingham Boulevard during the PM peak period and the existing roadway width and lane use north of North King Street. One of the existing southbound lanes could be utilized for a third northbound travel lane (see typical section below). Left-turn traffic movements would be restricted along Kalihi Street between North King Street and Dillingham Boulevard. The AM peak period traffic operating conditions without and with contra-flow operations were compared to determine if contra-flow operations should be implemented. These conditions are summarized in Table 13 and LOS calculations are included in Appendix G.





*Kalihi Street PM Peak Period  
Typical Section*

**Table 13: Without and With Contra-Flow Operations Along Kalihi Street PM Peak Hour Traffic Operating Conditions**

Intersection	Existing Conditions			With Contra-flow Conditions		
	INT.	NB	SB	INT.	NB	SB
Kalihi St/King St	59.8/E	63.0/E	59.8/E	58.7/E	62.8/E	55.8/E
Kalihi St/Kaumualii St	4.4/A	3.7/A	3.0/A	4.0/A	3.0/A	3.2/A
Kalihi St/Dillingham Blvd	30.0/C	36.1/D	30.4/C	29.7/C	37.4/D	31.2/C

Notes: INT = Intersection Average; NB = Northbound Approach; SB = Southbound Approach  
Results displayed as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service

The implementation of contra-flow operations during the PM peak period is not expected to improve traffic operations at the study intersections along Kalihi Street between North King Street and Dillingham Boulevard. In addition, restriction of turning movements along this section of the roadway will impact access (vehicular and pedestrian) to the adjacent King David Kalakaua Middle School and Kalihi Kai Elementary School. As such, it is not recommended that contra-flow operations be implemented along Kalihi Street during the PM peak period.

## **V. OTHER CONSIDERATIONS**

One of the challenges of implementing contra-flow operations is providing adequate guidance to allow for safe vehicular operations within a reasonable operating budget. In the past, the City and County of Honolulu (CCH) has considered modifying their existing contra-flow operations to provide more guidance for drivers along the affected roadways. Currently, the CCH utilizes cones spaced approximately 40' apart supplemented by periodic signage along the centerline of the roadway. The existing 40' spacing is sufficient to provide visual guidance for drivers along the roadway, but does not provide an adequate barrier for prohibited and/or unsafe turning maneuvers between intersections. Reducing the spacing between the cones to provide a more consistent barrier along the roadways would require an increase in daily operating costs since additional manpower and equipment may need to be dedicated to the contra-flow operations. Alternate technologies were also explored that could be utilized to provide definitive guidance for vehicles.

An alternative is the use of a moveable barrier similar to the barriers currently being deployed along the Interstate H-1 Freeway for the AM Zipper Lane contra-flow operations. This type of barrier would provide a continuous deterrent for prohibited and/or unsafe turning maneuvers between intersections but gaps would need to be provided at the intersections along the affected roadways to allow for traffic from the side streets. These gaps would increase the difficulty of implementing the system, but might result in an overall reduction in daily operating costs after the initial costs associated with the procurement of the necessary equipment. In addition, the barrier would most likely be stored along the centerline of the roadway during off-peak periods thereby restricting access to the adjacent properties, and an appropriate location would need to be designated for storing the barrier machine when not in use.

Another alternative is the implementation of reversible or flex lanes which use signage or signals to change the directional lane usage depending on the time of day. Based on the guidance provided in the "Manual on Uniform Traffic Control Devices" (MUTCD), lane-use control signals would be required to implement these types of lanes since left-turn traffic movements are allowed during contra-flow operations from different lanes than during off-peak periods. The implementation of reversible or flex lanes would include the procurement and installation of lane-use control signals over each lane mounted periodically,

most likely on mast arms spanning the roadway width, sufficiently far in advance of or beyond the any existing traffic signals (see image below).



*Flex Lanes on 5400 South in Utah*

In addition, modification may need to be made to the existing traffic signal systems along the roadway alignment to accommodate the new lanes. The use of reversible or flex lanes would minimize the daily operating costs after the cost of the initial installation, but would not provide any deterrent for prohibited and/or unsafe turning maneuvers between intersections.

## **VI. RECOMMENDATIONS**

Based on the analysis of the traffic data, the following are the recommendations of this study.

1. Maintain existing contra-flow operations during the AM and PM peak periods on Kapiolani Boulevard including the existing turning restrictions at the intersections along that roadway.
2. Maintain existing contra-flow operations during the AM peak period on Ward Avenue.
3. Maintain existing contra-flow operations during the AM peak period on Atkinson Drive.



4. Implement contra-flow operations along Dillingham Boulevard during the AM peak period from west of Puuhale Road to Waiakamilo Road. Use the existing striped median to provide an additional eastbound travel lane with left-turn bays/lanes maintained through the use of the inner westbound travel lane. The traffic conditions should be reassessed when the future rail guideway system is implemented in the roadway median.

## **VII. CONCLUSION**

There are currently three corridors within the City and County of Honolulu's jurisdiction where contra-flow operations have been implemented. These corridors are Kapiolani Boulevard, Ward Avenue, and Atkinson Drive. The existing contra-flow operations along these corridors were assessed to determine if modifications should be made to the existing operations including termination, extension, and implementation during periods other than those currently being served. In addition, the Dillingham Boulevard and Kalihi Street corridors were assessed to determine if new contra-flow operations should be implemented along those roadways. Based on these assessments, the existing contra-flow operations along Kapiolani Boulevard, Ward Avenue, and Atkinson Drive are recommended to remain the same as existing with new contra-flow operations recommended to be implemented along Dillingham Boulevard during the AM peak period between west of Puuhale Road and Waiakamilo Road.

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**APPENDIX A**  
**EXISTING TRAFFIC COUNT DATA**

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# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, MM  
Counter: D4-5676, D4-5675  
Weather: Clear

File Name : KapSou AM  
Site Code : 00000001  
Start Date : 10/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Southbound				Kapiolani Boulevard Westbound				South Street Northbound				Kapiolani Boulevard Eastbound									
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	0	0	70	8	78	0	45	3	6	54	0	55	0	10	65	0	55	0	10	65	197
06:15 AM	0	0	0	50	4	54	0	68	8	9	85	0	82	0	11	93	0	82	0	11	93	232
06:30 AM	0	0	0	92	7	99	0	112	7	14	133	0	92	0	7	99	0	92	0	7	99	331
06:45 AM	0	0	0	116	12	128	0	134	5	10	149	0	156	0	10	166	0	156	0	10	166	443
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>328</b>	<b>31</b>	<b>359</b>	<b>0</b>	<b>359</b>	<b>23</b>	<b>39</b>	<b>421</b>	<b>0</b>	<b>385</b>	<b>0</b>	<b>38</b>	<b>423</b>	<b>0</b>	<b>385</b>	<b>0</b>	<b>38</b>	<b>423</b>	<b>1203</b>
07:00 AM	0	0	0	167	15	182	0	178	4	9	191	0	119	0	8	127	0	119	0	8	127	500
07:15 AM	0	0	0	166	20	186	0	137	5	17	159	0	147	0	18	165	0	147	0	18	165	510
07:30 AM	0	0	0	243	18	261	0	167	7	18	192	0	152	0	20	172	0	152	0	20	172	625
07:45 AM	0	0	0	197	21	218	0	128	6	24	158	0	175	0	14	189	0	175	0	14	189	565
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>773</b>	<b>74</b>	<b>847</b>	<b>0</b>	<b>610</b>	<b>22</b>	<b>68</b>	<b>700</b>	<b>0</b>	<b>593</b>	<b>0</b>	<b>60</b>	<b>653</b>	<b>0</b>	<b>593</b>	<b>0</b>	<b>60</b>	<b>653</b>	<b>2200</b>
08:00 AM	0	0	0	170	18	188	0	148	16	14	178	0	194	0	10	204	0	194	0	10	204	570
08:15 AM	0	0	0	168	18	186	0	143	7	10	160	0	206	0	4	210	0	206	0	4	210	556
08:30 AM	0	0	0	144	12	156	0	135	3	13	151	0	174	0	6	180	0	174	0	6	180	487
08:45 AM	0	0	0	122	14	136	0	133	2	16	151	0	127	0	1	128	0	127	0	1	128	415
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>604</b>	<b>62</b>	<b>666</b>	<b>0</b>	<b>559</b>	<b>28</b>	<b>53</b>	<b>640</b>	<b>0</b>	<b>701</b>	<b>0</b>	<b>21</b>	<b>722</b>	<b>0</b>	<b>701</b>	<b>0</b>	<b>21</b>	<b>722</b>	<b>2028</b>
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1705</b>	<b>167</b>	<b>1872</b>	<b>0</b>	<b>1528</b>	<b>73</b>	<b>160</b>	<b>1761</b>	<b>0</b>	<b>1679</b>	<b>0</b>	<b>119</b>	<b>1798</b>	<b>0</b>	<b>1679</b>	<b>0</b>	<b>119</b>	<b>1798</b>	<b>5431</b>
<b>Approch % Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>91.1</b>	<b>8.9</b>	<b>34.5</b>	<b>0</b>	<b>86.8</b>	<b>4.1</b>	<b>9.1</b>	<b>32.4</b>	<b>0</b>	<b>93.4</b>	<b>0</b>	<b>6.6</b>	<b>33.1</b>	<b>0</b>	<b>93.4</b>	<b>0</b>	<b>6.6</b>	<b>33.1</b>	

Start Time	Southbound				Kapiolani Boulevard Westbound				South Street Northbound				Kapiolani Boulevard Eastbound										
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	170	17	187	0	148	7	10	160	0	174	0	6	180	0	174	0	6	180	487	
08:15 AM	0	0	0	168	18	186	0	143	7	10	160	0	206	0	4	210	0	206	0	4	210	556	
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>338</b>	<b>35</b>	<b>373</b>	<b>0</b>	<b>291</b>	<b>14</b>	<b>20</b>	<b>320</b>	<b>0</b>	<b>374</b>	<b>0</b>	<b>10</b>	<b>390</b>	<b>0</b>	<b>374</b>	<b>0</b>	<b>10</b>	<b>390</b>	<b>943</b>	
<b>% App. Total</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.800</b>	<b>.000</b>	<b>.877</b>	<b>.563</b>	<b>.894</b>	<b>.800</b>	<b>.000</b>	<b>.882</b>	<b>.000</b>	<b>.882</b>	<b>.882</b>	<b>.000</b>	<b>.882</b>	<b>.000</b>	<b>.882</b>	<b>.882</b>	<b>.935</b>	
PHF																							

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM





# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By:  
Counter: TU-0651, TU-0652  
Weather: Clear

File Name : KapCoo AM  
Site Code : 00000002  
Start Date : 10/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Cooke Street Southbound						Kapiolani Boulevard Westbound						Cooke Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
06:00 AM	0	2	0	5	7		25	60	17	9	111		5	10	3	6	24		0	57	8	5	70	
06:15 AM	0	4	0	5	9		28	49	15	7	99		3	11	5	11	30		0	75	9	10	94	
06:30 AM	0	5	2	12	19		73	84	27	8	192		6	19	5	5	35		0	97	6	8	111	
06:45 AM	0	4	7	13	24		72	109	39	10	230		5	31	8	6	50		0	134	20	11	165	
<b>Total</b>	0	15	9	35	59		198	302	98	34	632		19	71	21	28	139		0	363	43	34	440	
07:00 AM	0	3	4	8	15		103	152	35	6	296		4	39	8	13	64		0	117	8	17	142	
07:15 AM	0	7	2	4	13		113	180	38	7	338		3	43	8	23	77		0	139	15	22	176	
07:30 AM	1	13	3	21	38		96	213	45	7	361		7	41	11	14	73		0	143	14	19	176	
07:45 AM	0	4	1	17	22		120	172	50	17	359		5	35	8	18	66		0	141	26	15	182	
<b>Total</b>	1	27	10	50	88		432	717	168	37	1354		19	158	35	68	280		0	540	63	73	676	
08:00 AM	1	2	4	12	19		96	139	40	18	293		12	47	12	14	85		0	171	28	15	214	
08:15 AM	0	5	6	8	19		82	157	29	11	279		12	36	7	14	69		0	171	22	16	209	
08:30 AM	2	7	1	8	18		62	107	32	18	219		12	41	11	16	80		0	143	22	11	176	
08:45 AM	0	11	2	10	23		64	117	25	15	221		6	44	15	10	75		0	123	17	4	144	
<b>Total</b>	3	25	13	38	79		304	520	126	62	1012		42	168	45	54	309		0	608	89	46	743	
<b>Grand Total</b>	4	67	32	123	226		934	1539	392	133	2998		80	397	101	150	728		0	1511	195	153	1859	
<b>Approch %</b>	1.8	29.6	14.2	54.4	3.9		31.2	51.3	13.1	4.4	51.6		11	54.5	13.9	20.6	12.5		0	81.3	10.5	8.2	32	
<b>Total %</b>	0.1	1.2	0.6	2.1			16.1	26.5	6.7	2.3			1.4	6.8	1.7	2.6			0	26	3.4	2.6		

Start Time	Cooke Street Southbound						Kapiolani Boulevard Westbound						Cooke Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
07:15 AM	0	7	2	2	9		113	180	38	3	331		3	43	8	8	54		0	139	15	15	154	
07:30 AM	1	13	3	3	17		96	213	45	4	354		7	41	11	11	59		0	143	14	14	157	
07:45 AM	0	4	4	1	5		120	172	50	5	342		5	35	8	8	48		0	141	26	26	167	
08:00 AM	1	2	4	4	7		96	139	40	4	275		12	47	12	12	71		0	171	28	28	199	
<b>Total Volume</b>	2	26	10	10	38		425	704	173	27	1302		27	166	39	39	232		0	594	83	83	677	
<b>% App. Total</b>	5.3	68.4	26.3				32.6	54.1	13.3				11.6	71.6	16.8				0	87.7	12.3			
<b>PHF</b>	.500	.500	.625		.559		.885	.826	.865		.919		.563	.883	.813		.817		.000	.868	.741		.851	

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: PA, NT  
Counter: TU-0651, TU-0652  
Weather: Clear

File Name : KapCoo PM  
Site Code : 00000002  
Start Date : 10/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Cooke Street Southbound						Kapiolani Boulevard Westbound						Cooke Street Northbound						Kapiolani Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
03:00 PM	2	4	0	0	6		28	115	16	7	166		11	59	17	11	98		0	141	19	17	177		447
03:15 PM	1	8	5	0	14		69	146	28	8	251		14	53	18	8	93		3	165	8	11	187		545
03:30 PM	4	10	4	0	18		75	197	31	24	327		10	55	26	7	98		4	207	22	12	245		688
03:45 PM	2	4	7	0	13		87	183	17	3	290		11	56	30	17	114		1	212	13	17	243		660
Total	9	26	16	0	51		259	641	92	42	1034		46	223	91	43	403		8	725	62	57	852		2340
04:00 PM	0	5	3	0	8		71	161	19	10	261		18	60	35	18	131		0	211	14	10	235		635
04:15 PM	0	5	6	0	11		82	182	25	13	302		11	68	27	32	138		1	204	15	15	235		686
04:30 PM	3	13	10	6	32		88	189	33	13	323		17	89	54	27	187		1	207	13	29	250		792
04:45 PM	0	10	5	0	15		79	177	18	10	284		14	87	39	14	154		1	280	11	12	304		757
Total	3	33	24	6	66		320	709	95	46	1170		60	304	155	91	610		3	902	53	66	1024		2870
05:00 PM	5	7	4	0	16		87	160	34	15	296		23	93	46	28	190		4	248	16	17	285		787
05:15 PM	3	8	6	0	17		81	156	25	11	273		23	67	41	37	168		3	297	12	11	323		781
05:30 PM	3	4	2	0	9		50	147	21	11	229		19	63	24	13	119		1	266	8	10	285		642
05:45 PM	3	3	4	0	10		38	139	26	3	206		7	52	34	16	109		3	231	12	10	256		581
Total	14	22	16	0	52		256	602	106	40	1004		72	275	145	94	586		11	1042	48	48	1149		2791
Grand Total	26	81	56	6	169		835	1952	293	128	3208		178	802	391	228	1599		22	2669	163	171	3025		8001
Approch %	15.4	47.9	33.1	3.6			26	60.8	9.1	4			11.1	50.2	24.5	14.3			0.7	88.2	5.4	5.7			
Total %	0.3	1	0.7	0.1	2.1		10.4	24.4	3.7	1.6	40.1		2.2	10	4.9	2.8	20		0.3	33.4	2	2.1			37.8

Start Time	Cooke Street Southbound						Kapiolani Boulevard Westbound						Cooke Street Northbound						Kapiolani Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
04:30 PM	3	13	10		26		88	189	33	33	310		17	89	54	54	160		1	207	13	13	221		717
04:45 PM	0	10	5		15		79	177	18	18	274		14	87	39	39	140		1	280	11	11	292		721
05:00 PM	5	7	4		16		87	160	34	34	281		23	93	46	46	162		4	248	16	16	268		727
05:15 PM	3	8	6		17		81	156	25	25	262		23	67	41	41	131		3	297	12	12	312		722
Total Volume	11	38	25		74		335	682	110	110	1127		77	336	180	180	593		9	1032	52	52	1093		2887
% App. Total	14.9	51.4	33.8				29.7	60.5	9.8	9.8			13	56.7	30.4	30.4			0.8	94.4	4.8	4.8			
PHF	.550	.731	.625		.712		.952	.902	.809	.833	.909		.837	.903	.833	.833	.915		.563	.869	.813	.813			.876

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: DY, DS  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : WarKap AM  
Site Code : 00000001  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound						Kapiolani Boulevard Westbound						Ward Avenue Northbound						Kapiolani Boulevard Eastbound														
	Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total				
	Left	Thru	Right	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
06:00 AM	16	99	14	10	139	24	83	6	12	125	16	21	2	5	44	0	37	5	5	47	355	0	63	15	4	82	437	0	70	15	5	90	568
06:15 AM	18	96	13	10	137	35	91	11	13	150	21	35	5	7	68	0	63	15	4	82	437	0	70	15	5	90	568	0	70	15	5	90	568
06:30 AM	28	133	15	10	186	53	132	16	8	209	26	48	4	5	83	0	63	15	4	82	437	0	70	15	5	90	568	0	70	15	5	90	568
06:45 AM	34	124	19	18	195	76	252	24	18	370	27	64	13	17	121	0	63	15	4	82	437	0	70	15	5	90	568	0	70	15	5	90	568
Total	96	452	61	48	657	188	558	57	51	854	90	168	24	34	316	0	256	48	23	327	2154	0	256	48	23	327	2154	0	256	48	23	327	2154
07:00 AM	27	178	33	7	245	79	229	18	14	340	40	93	20	8	161	0	86	20	14	120	866	0	138	23	9	170	993	0	112	18	10	140	1049
07:15 AM	22	149	22	13	206	67	354	28	17	466	22	106	10	13	151	0	138	23	9	170	993	0	138	23	9	170	993	0	112	18	10	140	1049
07:30 AM	23	190	35	19	267	77	334	40	19	470	25	116	19	12	172	0	138	23	9	170	993	0	138	23	9	170	993	0	112	18	10	140	1049
07:45 AM	22	175	29	10	236	92	336	39	16	483	16	68	11	3	98	0	138	23	9	170	993	0	138	23	9	170	993	0	112	18	10	140	1049
Total	94	692	119	49	954	315	1253	125	66	1759	103	383	60	36	582	0	473	85	39	597	3892	0	473	85	39	597	3892	0	473	85	39	597	3892
08:00 AM	35	219	25	14	293	75	287	28	10	400	20	66	20	7	113	0	113	17	11	141	947	0	113	17	11	141	947	0	113	17	11	141	947
08:15 AM	28	176	32	7	243	80	269	23	16	388	30	75	21	9	135	0	108	34	7	149	915	0	108	34	7	149	915	0	108	34	7	149	915
08:30 AM	38	138	22	7	205	70	196	19	9	294	36	69	9	4	118	0	134	36	10	180	797	0	134	36	10	180	797	0	134	36	10	180	797
08:45 AM	23	145	40	9	217	66	154	20	13	253	27	63	11	7	108	0	127	31	9	167	745	0	127	31	9	167	745	0	127	31	9	167	745
Total	124	678	119	37	958	291	906	90	48	1335	113	273	61	27	474	0	482	118	37	637	3404	0	482	118	37	637	3404	0	482	118	37	637	3404
Grand Total	314	1822	299	134	2569	794	2717	272	165	3948	306	824	145	97	1372	0	1211	251	99	1561	9450	0	1211	251	99	1561	9450	0	1211	251	99	1561	9450
Approch %	12.2	70.9	11.6	5.2	27.2	20.1	68.8	6.9	4.2	41.8	22.3	60.1	10.6	7.1	14.5	0	77.6	16.1	6.3	16.5	94.50	0	77.6	16.1	6.3	16.5	94.50	0	77.6	16.1	6.3	16.5	94.50
Total %	3.3	19.3	3.2	1.4	27.2	8.4	28.8	2.9	1.7	41.8	3.2	8.7	1.5	1	14.5	0	12.8	2.7	1	16.5	94.50	0	12.8	2.7	1	16.5	94.50	0	12.8	2.7	1	16.5	94.50

Start Time	Ward Avenue Southbound						Kapiolani Boulevard Westbound						Ward Avenue Northbound						Kapiolani Boulevard Eastbound													
	Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total			
	Left	Thru	Right	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
07:15 AM	22	149	22	22	193	67	354	28	28	449	22	106	10	138	0	138	23	18	161	941	0	138	23	18	161	941	0	138	23	18	161	941
07:30 AM	23	190	35	29	248	77	334	40	40	451	25	116	19	160	0	112	18	18	130	989	0	112	18	18	130	989	0	112	18	18	130	989
07:45 AM	22	175	29	25	226	92	336	39	39	467	16	68	11	95	0	137	24	24	161	949	0	137	24	24	161	949	0	137	24	24	161	949
08:00 AM	35	219	25	25	279	75	287	28	28	390	20	66	20	106	0	113	17	17	130	905	0	113	17	17	130	905	0	113	17	17	130	905
Total Volume	102	733	111	111	946	311	1311	135	135	1757	83	356	60	499	0	500	82	82	582	3784	0	500	82	82	582	3784	0	500	82	82	582	3784
% App. Total	10.8	77.5	11.7	11.7	84.8	17.7	74.6	7.7	7.7	94.1	16.6	71.3	12	780	0	85.9	14.1	14.1	90.4	95.7	0	85.9	14.1	14.1	90.4	95.7	0	85.9	14.1	14.1	90.4	95.7
PHF	.729	.837	.793	.793	.848	.845	.926	.844	.844	.941	.830	.767	.750	.780	.000	.906	.854	.854	.904	.957	.000	.906	.854	.854	.904	.957	.000	.906	.854	.854	.904	.957

Peak Hour Analysis From 06:00 AM to 08:30 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: DY, DS  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : WarKap PM  
Site Code : 00000001  
Start Date : 10/16/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	03:00 PM	43	140	30	6	219	39	194	31	15	279	33	145	50	10	238	0	160	38	18
03:15 PM	33	150	28	2	213	0	224	45	15	284	31	144	52	16	243	0	171	39	12	222
03:30 PM	48	149	36	13	246	4	230	51	32	317	36	171	49	15	271	0	191	25	8	224
03:45 PM	52	149	19	8	228	0	266	46	29	341	32	143	51	34	260	0	230	30	8	268
<b>Total</b>	<b>176</b>	<b>588</b>	<b>113</b>	<b>29</b>	<b>906</b>	<b>43</b>	<b>914</b>	<b>173</b>	<b>91</b>	<b>1221</b>	<b>132</b>	<b>603</b>	<b>202</b>	<b>75</b>	<b>1012</b>	<b>0</b>	<b>752</b>	<b>132</b>	<b>46</b>	<b>930</b>
04:00 PM	52	176	30	19	277	2	235	42	34	313	48	168	65	33	314	0	215	26	24	265
04:15 PM	47	155	17	13	232	0	241	38	35	314	46	156	53	37	292	0	212	28	18	258
04:30 PM	59	171	40	24	294	1	251	34	47	333	45	147	58	31	281	0	280	30	15	325
04:45 PM	60	196	17	18	291	0	270	26	42	338	40	156	60	26	282	0	289	33	16	338
<b>Total</b>	<b>218</b>	<b>698</b>	<b>104</b>	<b>74</b>	<b>1094</b>	<b>3</b>	<b>997</b>	<b>140</b>	<b>158</b>	<b>1298</b>	<b>179</b>	<b>627</b>	<b>236</b>	<b>127</b>	<b>1169</b>	<b>0</b>	<b>996</b>	<b>117</b>	<b>73</b>	<b>1186</b>
05:00 PM	68	177	39	23	307	0	246	49	76	371	27	158	62	57	304	0	356	46	30	432
05:15 PM	62	184	40	20	306	7	275	35	45	362	44	167	71	31	313	0	264	34	18	316
05:30 PM	57	155	38	3	253	66	141	37	43	287	38	163	51	11	263	0	231	36	23	290
05:45 PM	58	185	25	13	281	73	167	31	41	312	30	196	36	38	300	0	316	36	15	367
<b>Total</b>	<b>245</b>	<b>701</b>	<b>142</b>	<b>59</b>	<b>1147</b>	<b>146</b>	<b>829</b>	<b>152</b>	<b>205</b>	<b>1332</b>	<b>139</b>	<b>684</b>	<b>220</b>	<b>137</b>	<b>1180</b>	<b>0</b>	<b>1167</b>	<b>152</b>	<b>86</b>	<b>1405</b>
<b>Grand Total</b>	<b>639</b>	<b>1987</b>	<b>359</b>	<b>162</b>	<b>3147</b>	<b>192</b>	<b>2740</b>	<b>465</b>	<b>454</b>	<b>3851</b>	<b>450</b>	<b>1914</b>	<b>658</b>	<b>339</b>	<b>3361</b>	<b>0</b>	<b>2915</b>	<b>401</b>	<b>205</b>	<b>3521</b>
<b>Approch %</b>	<b>20.3</b>	<b>63.1</b>	<b>11.4</b>	<b>5.1</b>	<b>22.7</b>	<b>5</b>	<b>71.2</b>	<b>12.1</b>	<b>11.8</b>	<b>27.7</b>	<b>13.4</b>	<b>56.9</b>	<b>19.6</b>	<b>10.1</b>	<b>24.2</b>	<b>0</b>	<b>82.8</b>	<b>11.4</b>	<b>5.8</b>	<b>25.4</b>
<b>Total %</b>	<b>4.6</b>	<b>14.3</b>	<b>2.6</b>	<b>1.2</b>	<b>22.7</b>	<b>1.4</b>	<b>19.7</b>	<b>3.4</b>	<b>3.3</b>	<b>27.7</b>	<b>3.2</b>	<b>13.8</b>	<b>4.7</b>	<b>2.4</b>	<b>24.2</b>	<b>0</b>	<b>21</b>	<b>2.9</b>	<b>1.5</b>	<b>25.4</b>

Start Time	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	04:30 PM	59	171	40	17	270	1	251	34	26	286	45	147	58	58	250	0	280	30	30
04:45 PM	60	196	17	39	273	0	270	26	296	296	40	156	60	60	256	0	289	33	322	310
05:00 PM	68	177	39	284	284	0	246	49	295	295	27	158	62	62	247	0	356	46	402	402
05:15 PM	62	184	40	286	286	7	275	35	317	317	44	167	71	71	282	0	264	34	298	298
<b>Total Volume</b>	<b>249</b>	<b>728</b>	<b>136</b>	<b>1113</b>	<b>8</b>	<b>1042</b>	<b>144</b>	<b>1194</b>	<b>156</b>	<b>628</b>	<b>251</b>	<b>1035</b>	<b>0</b>	<b>1189</b>	<b>143</b>	<b>1332</b>	<b>0</b>	<b>89.3</b>	<b>10.7</b>	<b>4674</b>
<b>% App. Total</b>	<b>22.4</b>	<b>65.4</b>	<b>12.2</b>	<b>9.73</b>	<b>0.7</b>	<b>87.3</b>	<b>12.1</b>	<b>9.42</b>	<b>15.1</b>	<b>60.7</b>	<b>24.3</b>	<b>9.18</b>	<b>0</b>	<b>89.3</b>	<b>10.7</b>	<b>.828</b>	<b>0</b>	<b>.835</b>	<b>.777</b>	<b>.952</b>
PHF	.915	.929	.850	.973	.286	.947	.735	.942	.867	.940	.884	.918	.000	.835	.777	.828				

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Counted By: JL, GC  
Counter: D4-3888, D4-5674  
Weather: Clear

File Name : KapKee AM  
Site Code : 00000001  
Start Date : 4/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kapiolani Boulevard Westbound				Kamakee Street Northbound				Kapiolani Boulevard Eastbound				Int. Total				
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
06:00 AM	0	20	117	0	1	138	4	0	6	6	16	0	45	8	5	58	212
06:15 AM	0	28	177	0	0	205	11	0	8	6	25	0	71	11	11	93	323
06:30 AM	0	32	260	0	2	294	8	0	13	6	27	0	76	8	6	90	411
06:45 AM	0	42	316	0	1	359	24	0	12	10	46	0	121	15	17	153	558
<b>Total</b>	<b>0</b>	<b>122</b>	<b>870</b>	<b>0</b>	<b>4</b>	<b>996</b>	<b>47</b>	<b>0</b>	<b>39</b>	<b>28</b>	<b>114</b>	<b>0</b>	<b>313</b>	<b>42</b>	<b>39</b>	<b>394</b>	<b>1504</b>
07:00 AM	0	51	319	0	0	370	16	0	15	9	40	0	115	14	19	148	558
07:15 AM	0	47	403	0	0	450	11	0	22	4	37	0	133	10	33	176	663
07:30 AM	0	60	402	0	4	466	20	0	15	11	46	0	157	14	50	221	733
07:45 AM	0	60	382	0	4	446	13	0	15	9	37	0	159	23	90	272	755
<b>Total</b>	<b>0</b>	<b>218</b>	<b>1506</b>	<b>0</b>	<b>8</b>	<b>1732</b>	<b>60</b>	<b>0</b>	<b>67</b>	<b>33</b>	<b>160</b>	<b>0</b>	<b>564</b>	<b>61</b>	<b>192</b>	<b>817</b>	<b>2709</b>
08:00 AM	0	63	391	0	2	456	12	0	14	12	38	0	165	17	47	229	723
08:15 AM	0	60	335	0	4	399	16	0	24	8	48	0	155	24	40	219	663
08:30 AM	0	62	275	0	5	342	19	0	30	5	54	0	143	18	9	170	566
08:45 AM	0	47	214	0	2	263	14	0	34	11	59	0	175	28	15	218	540
<b>Total</b>	<b>0</b>	<b>232</b>	<b>1215</b>	<b>0</b>	<b>13</b>	<b>1460</b>	<b>61</b>	<b>0</b>	<b>102</b>	<b>36</b>	<b>199</b>	<b>0</b>	<b>638</b>	<b>87</b>	<b>111</b>	<b>836</b>	<b>2495</b>
<b>Grand Total</b>	<b>0</b>	<b>572</b>	<b>3591</b>	<b>0</b>	<b>25</b>	<b>4188</b>	<b>168</b>	<b>0</b>	<b>208</b>	<b>97</b>	<b>473</b>	<b>0</b>	<b>1515</b>	<b>190</b>	<b>342</b>	<b>2047</b>	<b>6708</b>
Approach %	0	13.7	85.7	0	0.6	62.4	35.5	0	44	20.5	7.1	0	74	9.3	16.7	30.5	
Total %	0	8.5	53.5	0	0.4	62.4	2.5	0	3.1	1.4	7.1	0	22.6	2.8	5.1	30.5	

Start Time	Kapiolani Boulevard Westbound				Kamakee Street Northbound				Kapiolani Boulevard Eastbound				Int. Total				
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
07:15 AM	0	47	403	0	0	450	11	0	22	33	0	0	133	10	143	626	
07:30 AM	0	60	402	0	0	462	20	0	15	35	0	0	157	14	171	668	
07:45 AM	0	60	382	0	0	442	13	0	15	28	0	0	159	23	182	652	
08:00 AM	0	63	391	0	0	454	12	0	14	26	0	0	165	17	182	662	
<b>Total Volume</b>	<b>0</b>	<b>230</b>	<b>1578</b>	<b>0</b>	<b>0</b>	<b>1808</b>	<b>56</b>	<b>0</b>	<b>66</b>	<b>122</b>	<b>0</b>	<b>0</b>	<b>614</b>	<b>64</b>	<b>678</b>	<b>2608</b>	
% App. Total	.000	.913	.979	.000	.000	.978	.700	.000	.750	.871	.000	.000	.930	.696	.931	.976	
PHF																	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM



# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Counted By: GC, JL  
Counter: D4-3889, D4-3890  
Weather: Clear

File Name : KapKee PM  
Site Code : 00000001  
Start Date : 4/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Southbound			Kapiolani Boulevard Westbound			Waimanu Street Northbound			Kapiolani Boulevard Eastbound			Int. Total				
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
03:00 PM	0	38	177	0	0	215	32	0	60	10	102	0	205	15	22	242	559
03:15 PM	0	2	213	0	2	217	15	0	57	17	89	0	272	27	20	319	625
03:30 PM	0	0	212	0	10	222	22	0	49	25	96	0	263	23	43	329	647
03:45 PM	0	3	214	0	0	217	31	0	66	13	110	0	321	34	19	374	701
<b>Total</b>	0	43	816	0	12	871	100	0	232	65	397	0	1061	99	104	1264	2532
04:00 PM	0	3	298	0	10	311	27	0	76	19	122	0	306	30	31	367	800
04:15 PM	0	2	256	0	4	262	13	0	66	15	94	0	345	24	22	391	747
04:30 PM	0	2	243	0	8	253	32	0	11	100	100	0	323	29	23	375	728
04:45 PM	0	1	285	0	7	293	27	0	68	24	119	0	369	32	24	425	837
<b>Total</b>	0	8	1082	0	29	1119	99	0	287	69	435	0	1343	115	100	1558	3112
05:00 PM	0	2	232	0	0	234	36	0	100	24	160	0	364	28	23	415	809
05:15 PM	0	4	238	0	3	245	27	0	56	22	105	0	368	44	26	438	788
05:30 PM	0	53	169	0	11	233	30	0	65	15	110	0	340	27	22	389	732
05:45 PM	0	35	178	0	4	217	27	0	53	26	106	0	350	23	19	392	715
<b>Total</b>	0	94	817	0	18	929	120	0	274	87	481	0	1422	122	90	1634	3044
<b>Grand Total</b>	0	145	2715	0	59	2919	319	0	773	221	1313	0	3826	336	294	4456	8688
<b>Approach %</b>	0	5	93	0	2	33.6	24.3	0	58.9	16.8	15.1	0	85.9	7.5	6.6	51.3	
<b>Total %</b>	0	1.7	31.2	0	0.7	33.6	3.7	0	8.9	2.5	15.1	0	44	3.9	3.4	51.3	

Start Time	Southbound			Kapiolani Boulevard Westbound			Waimanu Street Northbound			Kapiolani Boulevard Eastbound			Int. Total				
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
04:30 PM	0	0	2	243	0	245	32	0	57	89	89	0	323	29	29	352	686
04:45 PM	0	0	1	285	0	286	27	0	68	95	95	0	369	32	32	401	762
05:00 PM	0	0	2	232	0	234	36	0	100	136	136	0	364	28	28	392	762
05:15 PM	0	0	4	238	0	242	27	0	56	83	83	0	368	44	44	412	737
<b>Total Volume</b>	0	0	9	998	0	1007	122	0	281	403	403	0	1424	133	133	1557	2967
<b>% App. Total</b>	.000	.563	99.1	.875	.000	.880	.847	.000	.703	.741	.741	.000	.965	.756	.85	.945	.949

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

**Wilson Okamoto Corporation**  
 1907 S. Beretania Street, Suite 400  
 Honolulu, Hawaii

Counted By: CB, YS  
 Counter: TU-0653, TU-0653  
 Weather: Clear

File Name : KapPen AM  
 Site Code : 00000002  
 Start Date : 3/6/2013  
 Page No : 1

Start Time	Groups Printed- Unshifted																				
	Pensacola Street Southbound				Kapiolani Boulevard Westbound				Pensacola Street Northbound				Kapiolani Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	15	47	22	2	86	12	120	0	0	132	0	0	0	4	4	0	55	4	1	60	282
06:15 AM	17	44	13	3	77	7	136	0	0	143	0	0	0	4	4	0	76	8	6	90	314
06:30 AM	23	69	23	9	124	9	245	0	0	254	0	0	0	8	8	0	70	21	9	100	486
06:45 AM	21	79	30	4	134	19	415	0	0	434	0	0	0	11	11	0	78	20	9	107	686
Total	76	239	88	18	421	47	916	0	0	963	0	0	0	27	27	0	279	53	25	357	1768
07:00 AM	36	110	49	9	204	23	308	0	0	331	0	0	0	8	8	0	143	20	5	168	711
07:15 AM	40	121	50	4	215	19	455	0	0	474	0	0	0	5	5	0	120	28	6	154	848
07:30 AM	50	160	67	16	293	25	393	0	0	418	0	0	0	11	11	0	131	32	10	173	895
07:45 AM	49	203	99	17	368	41	400	0	0	441	0	0	0	12	12	0	151	30	17	198	1019
Total	175	594	265	46	1080	108	1556	0	0	1664	0	0	0	36	36	0	545	110	38	693	3473
08:00 AM	70	203	131	13	417	33	307	0	0	340	0	0	0	8	8	0	154	32	5	191	956
08:15 AM	63	190	69	10	332	28	312	0	0	340	0	0	0	12	12	0	141	33	14	188	872
08:30 AM	58	184	58	11	311	25	213	0	0	238	0	0	0	9	9	0	170	32	6	208	766
08:45 AM	35	166	58	5	264	21	185	0	0	206	0	0	0	6	6	0	179	38	2	219	695
Total	226	743	316	39	1324	107	1017	0	0	1124	0	0	0	35	35	0	644	135	27	806	3289
Grand Total	477	1576	669	103	2825	262	3489	0	0	3751	0	0	0	98	98	0	1468	298	90	1856	8530
Approach %	16.9	55.8	23.7	3.6		7	93	0	0		0	0	0	100		0	79.1	16.1	4.8		
Total %	5.6	18.5	7.8	1.2	33.1	3.1	40.9	0	0	44	0	0	0	1.1	1.1	0	17.2	3.5	1.1	21.8	

Start Time	Groups Printed- Unshifted																				
	Pensacola Street Southbound				Kapiolani Boulevard Westbound				Pensacola Street Northbound				Kapiolani Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:30 AM	50	160	67	67	277	25	393	0	0	418	0	0	0	0	0	0	131	32	32	163	858
07:45 AM	49	203	99	99	351	41	400	0	0	441	0	0	0	0	0	0	151	30	30	181	973
08:00 AM	70	203	131	131	404	33	307	0	0	340	0	0	0	0	0	0	154	32	32	186	930
08:15 AM	63	190	69	69	322	28	312	0	0	340	0	0	0	0	0	0	141	33	33	174	836
Total Volume	232	756	366	366	1354	127	1412	0	0	1539	0	0	0	0	0	0	577	127	127	704	3597
% App. Total	17.1	55.8	27	27		8.3	91.7	0	0		0	0	0	0	0	0	82	18	18		
PHF	.829	.931	.698	.698	.838	.774	.863	.000	.000	.872	.000	.000	.000	.000	.000	.000	.937	.962	.962	.946	.924

**Wilson Okamoto Corporation**  
 1907 S. Beretania Street, Suite 400  
 Honolulu, Hawaii

Counted By: NT, ZL  
 Counter: TU-0653, TU-0651  
 Weather: Clear

File Name : KapPen PM  
 Site Code : 00000002  
 Start Date : 3/6/2013  
 Page No : 1

Start Time	Groups Printed- Unshifted																			
	Pensacola Street Southbound					Kapiolani Boulevard Westbound					Pensacola Street Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
03:00 PM	82	213	57	17	369	19	151	0	0	170	0	0	0	26	26	0	231	35	11	277
03:15 PM	64	196	53	25	338	4	211	0	0	215	0	0	0	14	14	0	288	40	18	346
03:30 PM	59	191	62	21	333	9	180	0	0	189	0	0	0	19	19	0	261	40	29	330
03:45 PM	80	195	50	18	343	2	167	0	0	169	0	0	0	27	27	0	303	46	12	361
<b>Total</b>	<b>285</b>	<b>795</b>	<b>222</b>	<b>81</b>	<b>1383</b>	<b>34</b>	<b>709</b>	<b>0</b>	<b>0</b>	<b>743</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>86</b>	<b>86</b>	<b>0</b>	<b>1083</b>	<b>161</b>	<b>70</b>	<b>1314</b>
04:00 PM	72	196	51	13	332	5	174	0	0	179	0	0	0	23	23	0	315	55	4	374
04:15 PM	60	181	33	21	295	1	207	0	0	208	0	0	0	23	23	0	378	47	18	443
04:30 PM	83	198	36	28	345	2	172	0	0	174	0	0	0	14	14	0	399	37	15	451
04:45 PM	77	194	36	20	327	3	195	0	0	198	0	0	0	19	19	0	404	50	8	462
<b>Total</b>	<b>292</b>	<b>769</b>	<b>156</b>	<b>82</b>	<b>1299</b>	<b>11</b>	<b>748</b>	<b>0</b>	<b>0</b>	<b>759</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>79</b>	<b>79</b>	<b>0</b>	<b>1496</b>	<b>189</b>	<b>45</b>	<b>1730</b>
05:00 PM	78	187	52	37	354	2	214	0	0	216	0	0	0	21	21	0	419	54	10	483
05:15 PM	67	186	48	35	336	2	209	0	0	211	0	0	0	17	17	0	403	51	17	471
05:30 PM	62	191	40	16	309	13	151	0	0	164	0	0	0	28	28	0	350	44	3	397
05:45 PM	43	158	50	21	272	14	183	0	0	197	0	0	0	18	18	0	349	33	10	392
<b>Total</b>	<b>250</b>	<b>722</b>	<b>190</b>	<b>109</b>	<b>1271</b>	<b>31</b>	<b>757</b>	<b>0</b>	<b>0</b>	<b>788</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>	<b>94</b>	<b>0</b>	<b>1521</b>	<b>182</b>	<b>40</b>	<b>1743</b>
<b>Grand Total</b>	<b>827</b>	<b>2286</b>	<b>588</b>	<b>272</b>	<b>3953</b>	<b>76</b>	<b>2214</b>	<b>0</b>	<b>0</b>	<b>2290</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>259</b>	<b>259</b>	<b>0</b>	<b>4100</b>	<b>532</b>	<b>155</b>	<b>4787</b>
Approach %	20.9	57.8	14.4	6.9		3.3	96.7	0	0		0	0	0	100		0	85.6	11.1	3.2	
Total %	7.3	20.2	5	2.4	35	0.7	19.6	0	0	20.3	0	0	0	2.3	2.3	0	36.3	4.7	1.4	42.4

Start Time	Groups Printed- Unshifted																			
	Pensacola Street Southbound					Kapiolani Boulevard Westbound					Pensacola Street Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
04:30 PM	83	198	36	36	317	2	172	0	0	174	0	0	0	0	0	0	399	37	436	927
04:45 PM	77	194	36	36	307	3	195	0	0	198	0	0	0	0	0	0	404	50	454	959
05:00 PM	78	187	52	52	317	2	214	0	0	216	0	0	0	0	0	0	419	54	473	1006
05:15 PM	67	186	48	48	301	2	209	0	0	211	0	0	0	0	0	0	403	51	454	966
Total Volume	305	765	172	13.8	1242	9	790	0	0	799	0	0	0	0	0	0	1625	192	1817	3658
% App. Total	24.6	61.6	13.8			1.1	98.9	0	0		0	0	0	0		0	89.4	10.6		
PHF	.919	.966	.827		.979	.750	.923	.000	.000	.925	.000	.000	.000	.000	.000	.000	.970	.889	.960	.959



**Wilson Okamoto Corporation**  
 1907 S. Beretania Street, Suite 400  
 Honolulu, Hawaii

Counter:5671,0525  
 Counted By:RF,MK  
 Weather:Clear

File Name : KapPiiAM  
 Site Code : 00000000  
 Start Date : 4/19/2011  
 Page No : 1

Groups Printed- Unshifted

Start Time	Piikoi Street Southbound						Kapiolani Boulevard Westbound						Piikoi Street Northbound						Kapiolani Boulevard Eastbound														
	Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total				
	Left	Thru	Right	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
06:00 AM	0	0	0	0	14	14	280	8	203	42	27	280	13	103	15	7	138	0	53	1	6	60	0	53	1	6	60	0	53	1	6	60	492
06:15 AM	0	0	0	0	11	11	244	6	202	14	22	244	1	73	8	8	90	0	69	7	7	83	0	69	7	7	83	0	69	7	7	83	428
06:30 AM	0	0	0	0	7	7	318	3	276	30	9	318	14	112	6	4	136	0	88	8	10	106	0	88	8	10	106	0	88	8	10	106	567
06:45 AM	0	0	0	0	7	7	471	9	408	40	14	471	8	121	11	6	146	0	135	1	15	151	0	135	1	15	151	0	135	1	15	151	775
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39</b>	<b>39</b>	<b>1313</b>	<b>26</b>	<b>1089</b>	<b>126</b>	<b>72</b>	<b>1313</b>	<b>36</b>	<b>409</b>	<b>40</b>	<b>25</b>	<b>510</b>	<b>0</b>	<b>345</b>	<b>17</b>	<b>38</b>	<b>400</b>	<b>0</b>	<b>345</b>	<b>17</b>	<b>38</b>	<b>400</b>	<b>0</b>	<b>345</b>	<b>17</b>	<b>38</b>	<b>400</b>	<b>2262</b>
07:00 AM	0	0	0	0	12	12	461	2	395	54	10	461	15	190	11	4	220	0	133	7	10	150	0	133	7	10	150	0	133	7	10	150	843
07:15 AM	0	0	0	0	7	7	578	7	506	54	11	578	11	187	14	4	216	0	175	16	22	213	0	175	16	22	213	0	175	16	22	213	1014
07:30 AM	0	0	0	0	7	7	603	15	520	56	12	603	21	197	16	5	239	0	206	13	20	239	0	206	13	20	239	0	206	13	20	239	1088
07:45 AM	0	0	0	0	5	5	546	11	463	50	22	546	10	187	7	8	212	0	193	16	12	221	0	193	16	12	221	0	193	16	12	221	984
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>31</b>	<b>2188</b>	<b>35</b>	<b>1884</b>	<b>214</b>	<b>55</b>	<b>2188</b>	<b>57</b>	<b>761</b>	<b>48</b>	<b>21</b>	<b>887</b>	<b>0</b>	<b>707</b>	<b>52</b>	<b>64</b>	<b>823</b>	<b>0</b>	<b>707</b>	<b>52</b>	<b>64</b>	<b>823</b>	<b>0</b>	<b>707</b>	<b>52</b>	<b>64</b>	<b>823</b>	<b>3929</b>
08:00 AM	0	0	0	0	7	7	456	4	381	44	27	456	19	164	14	6	203	0	188	14	8	210	0	188	14	8	210	0	188	14	8	210	876
08:15 AM	0	0	0	0	7	7	400	4	320	46	30	400	13	156	17	6	192	0	208	19	10	237	0	208	19	10	237	0	208	19	10	237	836
08:30 AM	0	0	0	0	5	5	289	4	236	31	18	289	24	197	23	6	250	0	192	25	16	233	0	192	25	16	233	0	192	25	16	233	777
08:45 AM	0	0	0	0	7	7	279	9	205	38	27	279	23	189	20	7	249	0	213	11	17	241	0	213	11	17	241	0	213	11	17	241	776
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>26</b>	<b>1424</b>	<b>21</b>	<b>1142</b>	<b>159</b>	<b>102</b>	<b>1424</b>	<b>79</b>	<b>716</b>	<b>74</b>	<b>25</b>	<b>894</b>	<b>0</b>	<b>801</b>	<b>69</b>	<b>51</b>	<b>921</b>	<b>0</b>	<b>801</b>	<b>69</b>	<b>51</b>	<b>921</b>	<b>0</b>	<b>801</b>	<b>69</b>	<b>51</b>	<b>921</b>	<b>3265</b>
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>96</b>	<b>96</b>	<b>4925</b>	<b>82</b>	<b>4115</b>	<b>499</b>	<b>229</b>	<b>4925</b>	<b>172</b>	<b>1886</b>	<b>162</b>	<b>71</b>	<b>2291</b>	<b>0</b>	<b>1853</b>	<b>138</b>	<b>153</b>	<b>2144</b>	<b>0</b>	<b>1853</b>	<b>138</b>	<b>153</b>	<b>2144</b>	<b>0</b>	<b>1853</b>	<b>138</b>	<b>153</b>	<b>2144</b>	<b>9456</b>
Apprch %	0	0	0	0	100	100	4.6	1.7	83.6	10.1	4.6	4.6	7.5	82.3	7.1	3.1	24.2	0	86.4	6.4	7.1	22.7	0	86.4	6.4	7.1	22.7	0	86.4	6.4	7.1	22.7	
Total %	0	0	0	0	1	1	52.1	0.9	43.5	5.3	2.4	52.1	1.8	19.9	1.7	0.8	24.2	0	19.6	1.5	1.6	22.7	0	19.6	1.5	1.6	22.7	0	19.6	1.5	1.6	22.7	

Start Time	Piikoi Street Southbound						Kapiolani Boulevard Westbound						Piikoi Street Northbound						Kapiolani Boulevard Eastbound															
	Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total		Left		Thru		Right		Peds		App. Total					
	Left	Thru	Right	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total		
07:15 AM	0	0	0	0	0	0	567	7	506	54	54	567	11	187	14	14	212	0	175	16	191	0	175	16	191	0	175	16	191	0	175	16	191	970
07:30 AM	0	0	0	0	0	0	591	15	520	56	56	591	21	197	16	16	234	0	206	13	219	0	206	13	219	0	206	13	219	0	206	13	219	1044
07:45 AM	0	0	0	0	0	0	524	11	463	50	50	524	10	187	7	7	204	0	193	16	209	0	193	16	209	0	193	16	209	0	193	16	209	837
08:00 AM	0	0	0	0	0	0	429	4	381	44	44	429	19	164	14	14	197	0	188	14	202	0	188	14	202	0	188	14	202	0	188	14	202	828
Total Volume	0	0	0	0	0	0	2111	37	1870	204	204	2111	61	735	51	51	847	0	762	59	821	0	762	59	821	0	762	59	821	0	762	59	821	3779
% App. Total	0	0	0	0	0	0	9.7	1.8	88.6	9.7	9.7	9.7	7.2	86.8	6	6	24.2	0	92.8	7.2	8.2	0	92.8	7.2	8.2	0	92.8	7.2	8.2	0	92.8	7.2	8.2	37.9
PHF	.000	.000	.000	.000	.000	.000	.893	.617	.899	.911	.893	.893	.726	.933	.797	.797	.905	.000	.925	.922	.937	.000	.925	.922	.937	.000	.925	.922	.937	.000	.925	.922	.937	.905

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

File Name : KapPiiPM  
Site Code : 00000000  
Start Date : 4/19/2011  
Page No : 1

Counter:5671,0525  
Counted By:RF, MK  
Weather:Clear

Groups Printed- Unshifted

Start Time	Piiikoi Street Southbound					Kapiolani Boulevard Westbound					Piiikoi Street Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	03:00 PM	0	0	0	19	19	6	198	60	41	305	33	287	49	34	403	0	325	29	11
03:15 PM	0	0	0	12	12	3	177	56	17	253	37	279	34	24	374	1	331	22	11	365
03:30 PM	0	0	0	7	7	0	175	56	11	242	38	281	42	18	379	0	325	32	19	376
03:45 PM	0	0	0	7	7	1	198	82	15	296	37	254	50	17	358	1	337	37	11	386
Total	0	0	0	45	45	10	748	254	84	1096	145	1101	175	93	1514	2	1318	120	52	1492
04:00 PM	0	0	0	12	12	2	165	60	34	261	34	281	37	19	371	0	430	27	15	472
04:15 PM	0	0	1	14	15	0	216	52	29	297	38	279	52	22	391	0	369	24	15	408
04:30 PM	0	0	0	16	16	0	198	63	31	292	42	310	55	23	430	0	483	38	24	545
04:45 PM	0	0	0	6	6	1	183	65	30	279	49	263	50	33	395	0	467	22	20	509
Total	0	0	1	48	49	3	762	240	124	1129	163	1133	194	97	1587	0	1749	111	74	1934
05:00 PM	0	0	0	21	21	0	197	65	30	292	30	314	53	29	426	0	518	41	31	590
05:15 PM	0	0	0	12	12	0	178	64	23	265	53	286	46	21	406	0	430	25	23	478
05:30 PM	0	0	0	25	25	7	173	52	35	267	39	300	63	19	421	0	441	23	27	491
05:45 PM	0	0	0	7	7	14	209	65	16	304	41	266	50	21	378	0	389	25	11	425
Total	0	0	0	65	65	21	757	246	104	1128	163	1166	212	90	1631	0	1778	114	92	1984
Grand Total	0	0	1	158	159	34	2267	740	312	3353	471	3400	581	280	4732	2	4845	345	218	5410
Approch %	0	0	0.6	99.4	1.2	1	67.6	22.1	9.3	24.6	10	71.9	12.3	5.9	34.7	0	89.6	6.4	4	39.6
Total %	0	0	0	1.2	1.2	0.2	16.6	5.4	2.3	24.6	3.4	24.9	4.3	2.1	34.7	0	35.5	2.5	1.6	39.6

Start Time	Piiikoi Street Southbound					Kapiolani Boulevard Westbound					Piiikoi Street Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	04:30 PM	0	0	0	0	0	0	198	63	63	261	42	310	55	407	0	483	38	521	1189
04:45 PM	0	0	0	0	0	1	183	65	65	249	49	263	50	362	0	467	22	489	1100	
05:00 PM	0	0	0	0	0	0	197	65	65	262	30	314	53	397	0	518	41	559	1218	
05:15 PM	0	0	0	0	0	0	178	64	64	242	53	286	46	385	0	430	25	455	1082	
Total Volume	0	0	0	0	0	1	756	257	257	1014	174	1173	204	1551	0	1898	126	2024	4589	
% App. Total	0	0	0	0	0	0.1	74.6	25.3	988	.968	11.2	75.6	13.2	.953	0	93.8	6.2	.905	.942	
PHF	.000	.000	.000	.000	.000	.250	.955	.988	.988	.968	.821	.934	.927	.953	.000	.916	.768	.905	.942	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: D4-5673, TU-0653  
Counter: MN, AD  
Weather: Clear

File Name : KapKon AM  
Site Code : 00000005  
Start Date : 8/30/2012  
Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Kapiolani Boulevard Westbound					Kona Iki Street Northbound					Kapiolani Boulevard Eastbound					Int. Total					
	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds		App. Total	Right	Thru	Left	Peds
06:00 AM	0	0	126	4	2	132	0	0	4	7	11	0	0	4	7	11	9	52	0	0	61	9	52	0	0	61
06:15 AM	0	0	213	7	3	223	2	0	5	5	12	2	0	5	5	12	11	69	0	0	80	11	69	0	0	80
06:30 AM	0	0	310	4	3	317	2	0	4	12	22	2	0	4	12	22	19	111	0	0	130	19	111	0	0	130
06:45 AM	0	0	483	11	8	502	2	0	12	9	23	2	0	12	9	23	13	114	0	0	127	13	114	0	0	127
Total	0	0	1132	26	16	1174	6	0	29	33	68	6	0	29	33	68	52	346	0	0	398	52	346	0	0	398
07:00 AM	0	0	474	4	8	486	0	0	9	13	22	0	0	9	13	22	21	135	0	0	156	21	135	0	0	156
07:15 AM	0	0	549	6	5	560	7	0	10	20	37	7	0	10	20	37	23	143	0	0	166	23	143	0	0	166
07:30 AM	0	0	537	12	2	551	2	0	6	14	22	2	0	6	14	22	22	183	0	0	205	22	183	0	0	205
07:45 AM	0	0	508	9	10	527	4	0	10	17	31	4	0	10	17	31	18	159	0	0	177	18	159	0	0	177
Total	0	0	2068	31	25	2124	13	0	35	64	112	13	0	35	64	112	84	620	0	0	704	84	620	0	0	704
08:00 AM	0	0	403	15	8	426	4	0	13	19	36	4	0	13	19	36	36	163	0	0	199	36	163	0	0	199
08:15 AM	0	0	318	13	5	336	4	0	8	26	38	4	0	8	26	38	24	189	0	0	213	24	189	0	0	213
08:30 AM	0	0	245	9	10	264	8	0	18	20	46	8	0	18	20	46	32	191	0	0	223	32	191	0	0	223
08:45 AM	0	0	208	20	8	236	11	0	13	22	46	11	0	13	22	46	29	210	0	0	239	29	210	0	0	239
Total	0	0	1174	57	31	1262	27	0	52	87	166	27	0	52	87	166	121	753	0	0	874	121	753	0	0	874
Grand Total	0	0	4374	114	72	4560	46	0	116	184	346	46	0	116	184	346	257	1719	0	0	1976	257	1719	0	0	1976
Approach %	0	0	95.9	2.5	1.6	66.3	13.3	0	33.5	53.2	5	13.3	0	33.5	53.2	5	13	87	0	0	28.7	13	87	0	0	28.7
Total %	0	0	63.6	1.7	1	66.3	0.7	0	1.7	2.7	5	0.7	0	1.7	2.7	5	3.7	25	0	0	28.7	3.7	25	0	0	28.7

Start Time	Southbound			Kapiolani Boulevard Westbound			Kona Iki Street Northbound			Kapiolani Boulevard Eastbound			Int. Total						
	App. Total	Right	Thru	App. Total	Right	Thru	App. Total	Right	Thru	App. Total	Right	Thru		Left	App. Total	Right	Thru	Left	
07:00 AM	0	0	0	474	4	478	0	0	0	9	9	0	0	156	21	135	0	0	643
07:15 AM	0	0	0	549	6	555	7	0	10	17	17	7	0	166	23	143	0	0	738
07:30 AM	0	0	0	537	12	549	2	0	6	8	8	2	0	205	22	183	0	0	762
07:45 AM	0	0	0	508	9	517	4	0	10	14	14	4	0	177	18	159	0	0	708
Total Volume	0	0	0	2068	31	2099	13	0	35	48	48	13	0	704	84	620	0	0	2851
% App. Total	.000	.000	.000	.942	1.5	.945	27.1	0	72.9	.706	.706	11.9	88.1	.859	11.9	88.1	0	0	.935
PHF					.646		.464	.000	.875			.913	.000			.847	.000		

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:00 AM



# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: D4-5673, TU-0653  
Counter: MN, RF  
Weather: Clear

File Name : KapKon PM  
Site Code : 00000005  
Start Date : 8/30/2012  
Page No : 1

Groups Printed- Unshifted

Start Time	Southbound				Kapiolani Boulevard Westbound				Kona Iki Street Northbound				Kapiolani Boulevard Eastbound				Int. Total	
	App. Total	Right	Thru	Left	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left		Peds
03:00 PM	0	0	148	0	0	15	163	19	0	29	18	66	26	282	7	0	315	544
03:15 PM	0	0	201	3	29	233	14	14	0	47	14	75	29	325	7	0	361	669
03:30 PM	0	0	193	1	12	206	21	21	0	29	21	71	41	342	6	0	389	666
03:45 PM	0	0	212	1	25	238	19	19	0	36	30	85	42	351	4	0	397	720
Total	0	0	754	5	81	840	73	73	0	141	83	297	138	1300	24	0	1462	2599
04:00 PM	0	0	209	0	17	226	27	27	0	35	26	88	46	423	4	0	473	787
04:15 PM	0	0	191	0	29	220	27	27	0	40	22	89	46	409	2	0	457	766
04:30 PM	0	0	185	0	31	216	25	25	0	41	26	92	39	471	6	0	516	824
04:45 PM	0	0	185	1	17	203	24	24	0	37	22	83	39	482	4	0	525	811
Total	0	0	770	1	94	865	103	103	0	153	96	352	170	1785	16	0	1971	3188
05:00 PM	0	0	203	0	23	226	35	35	0	35	26	96	35	460	7	0	502	824
05:15 PM	0	0	199	1	19	219	22	22	0	48	23	93	48	425	5	0	478	790
05:30 PM	0	0	188	12	18	218	21	21	0	46	12	79	36	381	11	0	428	725
05:45 PM	0	0	199	16	23	238	8	8	0	27	22	57	44	365	13	0	422	717
Total	0	0	789	29	83	901	86	86	0	156	83	325	163	1631	36	0	1830	3056
Grand Total	0	0	2313	35	258	2606	262	262	0	450	262	974	471	4716	76	0	5263	8843
Approach %	0	0	88.8	1.3	9.9	26.9	26.9	26.9	0	46.2	26.9	11	8.9	89.6	1.4	0	59.5	
Total %	0	0	26.2	0.4	2.9	29.5	3	3	0	5.1	3	11	5.3	53.3	0.9	0	59.5	

Start Time	Southbound				Kapiolani Boulevard Westbound				Kona Iki Street Northbound				Kapiolani Boulevard Eastbound				Int. Total	
	App. Total	Right	Thru	Left	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left		Peds
04:30 PM	0	0	185	0	0	185	25	25	0	41	41	66	39	471	6	0	516	767
04:45 PM	0	0	185	1	24	186	24	24	0	37	37	61	39	482	4	0	525	772
05:00 PM	0	0	203	0	35	203	35	35	0	35	35	70	35	460	7	0	502	775
05:15 PM	0	0	199	1	22	200	22	22	0	48	48	70	48	425	5	0	478	748
Total Volume	0	0	772	2	774	774	106	106	0	161	161	267	161	1838	22	0	2021	3062
% App. Total	0	0	99.7	0.3	99.7	99.7	39.7	39.7	0	60.3	60.3	954	8	90.9	1.1	0	962	
PHF	.000	.000	.951	.500	.953	.953	.757	.757	.000	.839	.839	.954	.839	.953	.786	0	.962	.988

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By:MM, MA  
Counter:TU-0649, TU-0650  
Weather:Clear

File Name : KapKee AM - 1  
Site Code : 00000001  
Start Date : 8/2/2012  
Page No : 1

Start Time	Southbound			Westbound			Street Between Ala MOana Ramp And Nordstrom						Eastbound	
	App. Total	Thru	Left	Right	Thru	Left	Right	Thru	Left	Peds	App. Total	App. Total	Int. Total	
06:00 AM	0	10	0	2	10	0	2	10	0	0	12	0	12	
06:15 AM	0	10	0	1	10	0	1	10	0	0	11	0	11	
06:30 AM	0	20	0	0	20	0	0	20	0	0	20	0	20	
06:45 AM	0	10	0	2	10	0	2	10	0	0	12	0	12	
<b>Total</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>5</b>	<b>50</b>	<b>0</b>	<b>5</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>55</b>	
07:00 AM	0	11	0	3	11	0	3	11	0	0	14	0	14	
07:15 AM	0	22	0	1	22	0	1	22	0	0	23	0	23	
07:30 AM	0	15	0	1	15	0	1	15	0	0	16	0	16	
07:45 AM	0	26	0	5	26	0	5	26	0	0	31	0	31	
<b>Total</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>10</b>	<b>74</b>	<b>0</b>	<b>10</b>	<b>74</b>	<b>0</b>	<b>0</b>	<b>84</b>	<b>0</b>	<b>84</b>	
08:00 AM	0	25	0	2	25	0	2	25	0	0	27	0	27	
08:15 AM	0	39	0	6	39	0	6	39	0	0	45	0	45	
08:30 AM	0	24	0	2	24	0	2	24	0	0	26	0	26	
08:45 AM	0	26	0	5	26	0	5	26	0	0	31	0	31	
<b>Total</b>	<b>0</b>	<b>114</b>	<b>0</b>	<b>15</b>	<b>114</b>	<b>0</b>	<b>15</b>	<b>114</b>	<b>0</b>	<b>0</b>	<b>129</b>	<b>0</b>	<b>129</b>	
<b>Grand Total</b>	<b>0</b>	<b>238</b>	<b>0</b>	<b>30</b>	<b>238</b>	<b>0</b>	<b>30</b>	<b>238</b>	<b>0</b>	<b>0</b>	<b>268</b>	<b>0</b>	<b>268</b>	
<b>Approch %</b>	<b>0</b>	<b>88.8</b>	<b>0</b>	<b>11.2</b>	<b>88.8</b>	<b>0</b>	<b>11.2</b>	<b>88.8</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	
<b>Total %</b>	<b>0</b>	<b>88.8</b>	<b>0</b>	<b>11.2</b>	<b>88.8</b>	<b>0</b>	<b>11.2</b>	<b>88.8</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	

Start Time	Southbound			Westbound			Street Between Ala MOana Ramp And Nordstrom						Eastbound	
	App. Total	Thru	Left	Right	Thru	Left	Right	Thru	Left	Peds	App. Total	App. Total	Int. Total	
07:45 AM	0	5	0	0	5	0	0	5	0	0	31	0	31	
08:00 AM	0	2	0	2	2	0	2	2	0	0	27	0	27	
08:15 AM	0	6	0	6	6	0	6	6	0	0	45	0	45	
08:30 AM	0	2	0	2	2	0	2	2	0	0	26	0	26	
<b>Total Volume</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>129</b>	<b>0</b>	<b>129</b>	
<b>%App. Total</b>	<b>.000</b>	<b>11.6</b>	<b>0</b>	<b>11.6</b>	<b>88.4</b>	<b>0</b>	<b>11.6</b>	<b>88.4</b>	<b>0</b>	<b>.000</b>	<b>.717</b>	<b>.000</b>	<b>.717</b>	
<b>PHF</b>	<b>.000</b>	<b>.625</b>	<b>.000</b>	<b>.625</b>	<b>.731</b>	<b>.000</b>	<b>.625</b>	<b>.731</b>	<b>.000</b>	<b>.000</b>	<b>.717</b>	<b>.000</b>	<b>.717</b>	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:45 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: MM, MA  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : KapKee PM  
Site Code : 00000001  
Start Date : 8/2/2012  
Page No : 1

Groups Printed- Unshifted

Start Time	Keeaumoku Street Southbound				Kapiolani Boulevard Westbound				Ala Moana Shopping Center Northbound				Kapiolani Boulevard Eastbound								
	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
03:00 PM	24	119	51	41	235	24	194	0	139	357	10	49	0	73	132	32	247	32	71	382	1106
03:15 PM	13	144	60	16	233	27	205	0	178	410	4	60	0	54	118	26	220	24	85	355	1116
03:30 PM	7	124	45	33	209	40	206	0	167	413	3	38	0	60	101	32	300	23	108	463	1186
03:45 PM	20	163	46	19	248	27	211	0	124	362	3	69	0	45	117	28	284	26	85	423	1150
<b>Total</b>	<b>64</b>	<b>550</b>	<b>202</b>	<b>109</b>	<b>925</b>	<b>118</b>	<b>816</b>	<b>0</b>	<b>608</b>	<b>1542</b>	<b>20</b>	<b>216</b>	<b>0</b>	<b>232</b>	<b>468</b>	<b>118</b>	<b>1051</b>	<b>105</b>	<b>349</b>	<b>1623</b>	<b>4558</b>
04:00 PM	17	120	46	36	219	41	164	0	94	299	2	63	0	47	112	35	346	22	95	498	1128
04:15 PM	14	135	78	55	282	44	176	0	108	328	4	65	0	55	124	27	383	17	142	569	1303
04:30 PM	13	135	67	68	283	23	152	0	205	380	4	69	0	50	123	27	447	32	153	659	1445
04:45 PM	7	138	48	52	245	29	171	0	160	360	3	62	0	40	105	19	370	28	102	519	1229
<b>Total</b>	<b>51</b>	<b>528</b>	<b>239</b>	<b>211</b>	<b>1029</b>	<b>137</b>	<b>663</b>	<b>0</b>	<b>567</b>	<b>1367</b>	<b>13</b>	<b>259</b>	<b>0</b>	<b>192</b>	<b>464</b>	<b>108</b>	<b>1546</b>	<b>99</b>	<b>492</b>	<b>2245</b>	<b>5105</b>
05:00 PM	27	165	68	71	331	18	159	0	62	239	17	54	0	48	119	6	436	25	157	624	1313
05:15 PM	12	186	45	51	294	38	139	0	159	336	7	72	0	51	130	26	350	34	230	640	1400
05:30 PM	19	143	68	55	285	36	162	0	185	383	7	42	0	28	77	20	311	17	198	546	1291
05:45 PM	28	164	58	52	302	33	201	0	116	350	13	73	0	46	132	24	243	30	123	420	1204
<b>Total</b>	<b>86</b>	<b>658</b>	<b>239</b>	<b>229</b>	<b>1212</b>	<b>125</b>	<b>661</b>	<b>0</b>	<b>522</b>	<b>1308</b>	<b>44</b>	<b>241</b>	<b>0</b>	<b>173</b>	<b>458</b>	<b>76</b>	<b>1340</b>	<b>106</b>	<b>708</b>	<b>2230</b>	<b>5208</b>
<b>Grand Total</b>	<b>201</b>	<b>1736</b>	<b>680</b>	<b>549</b>	<b>3166</b>	<b>380</b>	<b>2140</b>	<b>0</b>	<b>1697</b>	<b>4217</b>	<b>77</b>	<b>716</b>	<b>0</b>	<b>597</b>	<b>1390</b>	<b>302</b>	<b>3937</b>	<b>310</b>	<b>1549</b>	<b>6098</b>	<b>14871</b>
Approch %	6.3	54.8	21.5	17.3		9	50.7	0	40.2		5.5	51.5	0	42.9		5	64.6	5.1	25.4		
Total %	1.4	11.7	4.6	3.7	21.3	2.6	14.4	0	11.4	28.4	0.5	4.8	0	4	9.3	2	26.5	2.1	10.4	41	

Start Time	Keeaumoku Street Southbound				Kapiolani Boulevard Westbound				Ala Moana Shopping Center Northbound				Kapiolani Boulevard Eastbound								
	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
04:15 PM	14	135	78		227	44	176	0		220	4	65	0		69	27	383	17		427	943
04:30 PM	13	135	67		215	23	152	0		175	4	69	0		73	27	447	32		506	969
04:45 PM	7	138	48		193	29	171	0		200	3	62	0		65	19	370	28		417	875
05:00 PM	27	165	68		260	18	159	0		177	17	54	0		71	6	436	25		467	975
Total Volume	61	573	261		895	114	658	0		772	28	250	0		278	79	1636	102		1817	3762
% App. Total	6.8	64	29.2		.861	14.8	85.2	0			10.1	89.9	0		9.52	4.3	90	5.6			965
PHF	.565	.868	.837		.861	.648	.935	.000		.877	.412	.906	.000		.952	.731	.915	.797		.898	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: MM, MA  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : KapKee PM -1  
Site Code : 00000001  
Start Date : 8/2/2012  
Page No : 1

Groups Printed- Unshifted												
Street Between Ala Moana Ramp and Nordstrom												
Start Time	Southbound			Westbound			Northbound			Eastbound		
	App. Total	Thru	Left	Right	Thru	Left	Right	Thru	Left	App. Total	App. Total	Int. Total
03:00 PM	0	78	0	10	0	0	0	0	0	88	0	88
03:15 PM	0	75	0	4	0	0	0	0	0	79	0	79
03:30 PM	0	68	0	3	0	0	0	0	0	71	0	71
03:45 PM	0	73	0	3	0	0	0	0	0	76	0	76
Total	0	294	0	20	0	0	0	0	0	314	0	314
04:00 PM	0	55	0	2	0	0	0	0	0	57	0	57
04:15 PM	0	67	0	4	0	0	0	0	0	71	0	71
04:30 PM	0	76	0	4	0	0	0	0	0	80	0	80
04:45 PM	0	78	0	3	0	0	0	0	0	81	0	81
Total	0	276	0	13	0	0	0	0	0	289	0	289
05:00 PM	0	63	0	17	0	0	0	0	0	80	0	80
05:15 PM	0	82	0	7	0	0	0	0	0	89	0	89
05:30 PM	0	49	0	7	0	0	0	0	0	56	0	56
05:45 PM	0	74	0	13	0	0	0	0	0	87	0	87
Total	0	268	0	44	0	0	0	0	0	312	0	312
Grand Total	0	838	0	77	0	0	0	0	0	915	0	915
Approch %		91.6		8.4						100		
Total %		91.6		8.4						100		

Street Between Ala Moana Ramp and Nordstrom												
Start Time	Southbound			Westbound			Northbound			Eastbound		
	App. Total	Thru	Left	Right	Thru	Left	Right	Thru	Left	App. Total	App. Total	Int. Total
04:30 PM	0	76	0	4	0	0	0	0	0	80	0	80
04:45 PM	0	78	0	3	0	0	0	0	0	81	0	81
05:00 PM	0	63	0	17	0	0	0	0	0	80	0	80
05:15 PM	0	82	0	7	0	0	0	0	0	89	0	89
Total Volume	0	299	0	31	0	0	0	0	0	330	0	330
% App. Total	.000	90.6		9.4						92.7	.000	.927
PHF		.912		.456						.927	.000	.927



# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By:RF, GH  
Counter:TU-0652, TU-0653  
Weather:Clear

File Name : KahMahKap PM  
Site Code : 00000000  
Start Date : 8/2/2012  
Page No : 1

## Groups Printed- Unshifted

Start Time	Kaheka Street Southbound						Kapiolani Boulevard Westbound						Mahukona Street Northbound						Kapiolani Boulevard Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total				
03:00 PM	33	53	28	43	157	35	179	2	73	289	13	48	14	55	130	34	285	20	49	388				
03:15 PM	30	80	23	33	166	43	201	0	59	303	18	70	13	36	137	24	269	14	41	348				
03:30 PM	47	85	37	54	223	63	197	1	69	330	20	76	13	41	150	27	324	8	47	406				
03:45 PM	22	95	32	44	193	64	212	0	33	309	16	70	8	33	127	26	325	5	27	383				
Total	132	313	120	174	739	205	789	3	234	1231	67	264	48	165	544	111	1203	47	164	1525				
04:00 PM	19	107	32	22	180	82	171	0	72	325	21	82	4	38	145	23	382	8	42	455				
04:15 PM	27	71	31	42	171	78	175	0	93	346	17	64	7	49	137	16	454	9	44	523				
04:30 PM	24	103	25	33	185	67	163	0	84	314	14	83	5	41	143	19	500	11	53	583				
04:45 PM	16	84	31	44	175	63	186	0	80	329	25	66	4	46	141	24	424	8	44	500				
Total	86	365	119	141	711	290	695	0	329	1314	77	295	20	174	566	82	1760	36	183	2061				
05:00 PM	16	104	30	58	208	79	165	0	74	318	28	90	7	60	185	21	481	8	47	557				
05:15 PM	18	99	34	37	188	54	163	1	82	300	10	72	3	45	130	17	430	6	38	491				
05:30 PM	23	111	36	65	235	62	178	0	47	287	16	82	3	31	132	26	351	7	41	425				
05:45 PM	26	85	33	35	179	68	188	0	66	322	17	47	2	35	101	25	339	7	31	402				
Total	83	399	133	195	810	263	694	1	269	1227	71	291	15	171	548	89	1601	28	157	1875				
Grand Total	301	1077	372	510	2260	758	2178	4	832	3772	215	850	83	510	1658	282	4564	111	504	5461				
Approch %	13.3	47.7	16.5	22.6		20.1	57.7	0.1	22.1		13	51.3	5	30.8		5.2	83.6	2	9.2					
Total %	2.3	8.2	2.8	3.9	17.2	5.8	16.6	0	6.3	28.7	1.6	6.5	0.6	3.9	12.6	2.1	34.7	0.8	3.8	41.5				

Start Time	Kaheka Street Southbound						Kapiolani Boulevard Westbound						Mahukona Street Northbound						Kapiolani Boulevard Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total				
04:15 PM	27	71	31		129	78	175	0		253	17	64	7		88	16	454	9		479				
04:30 PM	24	103	25		152	67	163	0		230	14	83	5		102	19	500	11		530				
04:45 PM	16	84	31		131	63	186	0		249	25	66	4		95	24	424	8		456				
05:00 PM	16	104	30		150	79	165	0		244	28	90	7		125	21	481	8		510				
Total Volume	83	362	117		562	287	689	0		976	84	303	23		410	80	1859	36		1975				
% App. Total	14.8	64.4	20.8			29.4	70.6	0			20.5	73.9	5.6			4.1	94.1	1.8						
PHF	.769	.870	.944		.924	.908	.926	.000		.964	.750	.842	.821		.820	.833	.930	.818		.953				

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM





# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: DY, PA  
Counter: TU-0654, TU-0653  
Weather: Clear

File Name : KapAtk PM  
Site Code : 00000001  
Start Date : 10/23/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Kapiolani Boulevard Westbound					Atkinson Drive Northbound					Kapiolani Boulevard Eastbound										
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	36	180	0	0	216	0	0	161	20	181	0	0	41	37	270	0	192	41	37	270	0	192	41	37	270	667
03:15 PM	2	204	0	0	206	0	0	176	11	187	0	0	51	34	308	0	223	51	34	308	0	223	51	34	308	701
03:30 PM	0	322	0	0	322	0	0	186	11	197	0	0	57	21	391	0	313	57	21	391	0	313	57	21	391	910
03:45 PM	0	231	0	0	231	0	0	171	11	182	0	0	47	26	375	0	302	47	26	375	0	302	47	26	375	788
<b>Total</b>	<b>38</b>	<b>937</b>	<b>0</b>	<b>0</b>	<b>975</b>	<b>0</b>	<b>0</b>	<b>694</b>	<b>53</b>	<b>747</b>	<b>0</b>	<b>0</b>	<b>196</b>	<b>118</b>	<b>1344</b>	<b>0</b>	<b>1030</b>	<b>196</b>	<b>118</b>	<b>1344</b>	<b>0</b>	<b>1030</b>	<b>196</b>	<b>118</b>	<b>1344</b>	<b>3066</b>
04:00 PM	2	252	0	0	254	0	0	187	8	195	0	0	42	24	429	0	363	42	24	429	0	363	42	24	429	878
04:15 PM	1	272	0	0	273	0	0	183	21	204	0	0	61	13	446	0	372	61	13	446	0	372	61	13	446	923
04:30 PM	1	274	0	0	275	0	0	189	11	200	0	0	50	50	485	0	385	50	50	485	0	385	50	50	485	960
04:45 PM	0	256	0	0	256	0	0	190	18	208	0	0	64	31	469	0	374	64	31	469	0	374	64	31	469	933
<b>Total</b>	<b>4</b>	<b>1054</b>	<b>0</b>	<b>0</b>	<b>1058</b>	<b>0</b>	<b>0</b>	<b>749</b>	<b>58</b>	<b>807</b>	<b>0</b>	<b>0</b>	<b>217</b>	<b>118</b>	<b>1829</b>	<b>0</b>	<b>1494</b>	<b>217</b>	<b>118</b>	<b>1829</b>	<b>0</b>	<b>1494</b>	<b>217</b>	<b>118</b>	<b>1829</b>	<b>3694</b>
05:00 PM	0	264	0	0	264	0	0	197	21	218	0	0	62	38	504	0	404	62	38	504	0	404	62	38	504	986
05:15 PM	0	294	0	0	294	0	0	204	24	228	0	0	52	41	467	0	374	52	41	467	0	374	52	41	467	999
05:30 PM	0	231	0	0	231	0	0	175	19	194	0	0	60	36	431	0	335	60	36	431	0	335	60	36	431	856
05:45 PM	0	242	0	0	242	0	0	223	35	258	0	0	48	44	469	0	377	48	44	469	0	377	48	44	469	969
<b>Total</b>	<b>0</b>	<b>1031</b>	<b>0</b>	<b>0</b>	<b>1031</b>	<b>0</b>	<b>0</b>	<b>799</b>	<b>99</b>	<b>898</b>	<b>0</b>	<b>0</b>	<b>222</b>	<b>159</b>	<b>1871</b>	<b>0</b>	<b>1490</b>	<b>222</b>	<b>159</b>	<b>1871</b>	<b>0</b>	<b>1490</b>	<b>222</b>	<b>159</b>	<b>1871</b>	<b>3800</b>
<b>Grand Total</b>	<b>42</b>	<b>3022</b>	<b>0</b>	<b>0</b>	<b>3064</b>	<b>0</b>	<b>0</b>	<b>2242</b>	<b>210</b>	<b>2452</b>	<b>0</b>	<b>0</b>	<b>635</b>	<b>395</b>	<b>5044</b>	<b>0</b>	<b>4014</b>	<b>635</b>	<b>395</b>	<b>5044</b>	<b>0</b>	<b>4014</b>	<b>635</b>	<b>395</b>	<b>5044</b>	<b>10560</b>
<b>Approch %</b>	<b>1.4</b>	<b>98.6</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>91.4</b>	<b>8.6</b>	<b>23.2</b>	<b>0</b>	<b>0</b>	<b>12.6</b>	<b>7.8</b>	<b>47.8</b>	<b>0</b>	<b>79.6</b>	<b>12.6</b>	<b>7.8</b>	<b>47.8</b>	<b>0</b>	<b>79.6</b>	<b>12.6</b>	<b>7.8</b>	<b>47.8</b>	
<b>Total %</b>	<b>0.4</b>	<b>28.6</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>21.2</b>	<b>2</b>	<b>23.2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3.7</b>	<b>47.8</b>	<b>0</b>	<b>38</b>	<b>6</b>	<b>3.7</b>	<b>47.8</b>	<b>0</b>	<b>38</b>	<b>6</b>	<b>3.7</b>	<b>47.8</b>	

Start Time	Southbound			Kapiolani Boulevard Westbound			Atkinson Drive Northbound			Kapiolani Boulevard Eastbound							
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	App. Total	Int. Total
04:30 PM	0	274	0	0	0	189	0	0	189	0	0	50	0	385	50	435	899
04:45 PM	0	256	0	0	0	190	0	0	190	0	0	64	0	374	64	438	884
05:00 PM	0	264	0	0	0	197	0	0	197	0	0	62	0	404	62	466	927
05:15 PM	0	294	0	0	0	204	0	0	204	0	0	52	0	374	52	426	924
<b>Total Volume</b>	<b>0</b>	<b>1088</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>780</b>	<b>0</b>	<b>0</b>	<b>780</b>	<b>0</b>	<b>0</b>	<b>228</b>	<b>0</b>	<b>1537</b>	<b>228</b>	<b>1765</b>	<b>3634</b>
<b>% App. Total</b>	<b>0.1</b>	<b>99.9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>12.9</b>	<b>0</b>	<b>87.1</b>	<b>12.9</b>	<b>.947</b>	<b>.980</b>
<b>PHF</b>	<b>.000</b>	<b>.250</b>	<b>.925</b>	<b>.000</b>	<b>.000</b>	<b>.956</b>	<b>.000</b>	<b>.000</b>	<b>.956</b>	<b>.000</b>	<b>.000</b>	<b>.891</b>	<b>.000</b>	<b>.951</b>	<b>.891</b>	<b>.947</b>	<b>.980</b>

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GL, NT  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : KapKal AM  
Site Code : 00000002  
Start Date : 10/23/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kalakaua Avenue Southbound					Kapiolani Boulevard Westbound					Kalakaua Avenue Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	06:00 AM	0	116	11	8	135	0	172	12	3	187	9	114	23	0	146	0	49	7	3
06:15 AM	0	164	7	21	192	0	223	15	7	245	39	51	4	0	94	0	34	23	9	66
06:30 AM	0	129	13	18	160	0	367	23	4	394	58	79	11	0	148	0	82	45	14	141
06:45 AM	0	162	17	28	207	0	514	33	11	558	78	96	9	0	183	0	80	64	20	164
<b>Total</b>	<b>0</b>	<b>571</b>	<b>48</b>	<b>75</b>	<b>694</b>	<b>0</b>	<b>1276</b>	<b>83</b>	<b>25</b>	<b>1384</b>	<b>184</b>	<b>340</b>	<b>47</b>	<b>0</b>	<b>571</b>	<b>0</b>	<b>245</b>	<b>139</b>	<b>46</b>	<b>430</b>
07:00 AM	0	135	18	32	185	0	560	40	21	621	101	151	13	0	265	0	114	70	17	201
07:15 AM	0	117	6	29	152	0	600	43	14	657	138	188	13	0	339	0	83	105	52	240
07:30 AM	0	152	13	37	202	0	557	44	18	619	135	188	24	0	347	0	85	134	29	248
07:45 AM	0	136	9	46	191	0	566	59	16	641	123	169	14	0	306	0	108	104	49	261
<b>Total</b>	<b>0</b>	<b>540</b>	<b>46</b>	<b>144</b>	<b>730</b>	<b>0</b>	<b>2283</b>	<b>186</b>	<b>69</b>	<b>2538</b>	<b>497</b>	<b>696</b>	<b>64</b>	<b>0</b>	<b>1257</b>	<b>0</b>	<b>390</b>	<b>413</b>	<b>147</b>	<b>950</b>
08:00 AM	0	187	32	34	253	0	479	51	20	550	113	157	17	0	287	0	78	107	22	207
08:15 AM	0	160	16	36	212	0	615	37	16	668	136	132	19	0	287	0	121	101	23	245
08:30 AM	0	175	24	41	240	0	394	45	24	463	116	138	21	0	275	0	111	103	27	241
08:45 AM	0	171	28	32	231	0	408	34	8	450	120	153	11	0	284	0	128	136	17	281
<b>Total</b>	<b>0</b>	<b>693</b>	<b>100</b>	<b>143</b>	<b>936</b>	<b>0</b>	<b>1896</b>	<b>167</b>	<b>68</b>	<b>2131</b>	<b>485</b>	<b>580</b>	<b>68</b>	<b>0</b>	<b>1133</b>	<b>0</b>	<b>438</b>	<b>447</b>	<b>89</b>	<b>974</b>
<b>Grand Total</b>	<b>0</b>	<b>1804</b>	<b>194</b>	<b>362</b>	<b>2360</b>	<b>0</b>	<b>5455</b>	<b>436</b>	<b>162</b>	<b>6053</b>	<b>1166</b>	<b>1616</b>	<b>179</b>	<b>0</b>	<b>2961</b>	<b>0</b>	<b>1073</b>	<b>999</b>	<b>282</b>	<b>2354</b>
Approch %	0	76.4	8.2	15.3	17.2	0	90.1	7.2	2.7	44.1	39.4	54.6	6	0	21.6	0	45.6	42.4	12	17.1
Total %	0	13.1	1.4	2.6	17.2	0	39.7	3.2	1.2	44.1	8.5	11.8	1.3	0	21.6	0	7.8	7.3	2.1	17.1

Start Time	Kalakaua Avenue Southbound					Kapiolani Boulevard Westbound					Kalakaua Avenue Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	07:30 AM	0	152	13	9	165	0	557	44	24	601	135	188	24	0	347	0	85	134	219
07:45 AM	0	136	9	32	145	0	566	59	14	625	123	169	14	0	306	0	108	104	212	1288
08:00 AM	0	187	16	32	219	0	479	51	17	530	113	157	17	0	287	0	78	107	185	1221
08:15 AM	0	160	16	16	176	0	615	37	19	652	136	132	19	0	287	0	121	101	222	1337
Total Volume	0	635	70	9.9	705	0	2217	191	7.9	2408	507	646	74	0	1227	0	392	446	838	5178
% App. Total	0	90.1	9.9	5.47	805	0	92.1	7.9	3.2	923	41.3	52.6	6	0	884	0	46.8	53.2	944	968
PHF	.000	.849	.547		.805	.000	.901	.809		.923	.932	.859	.771		.884	.000	.810	.832		.944

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:30 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GL, NT  
Counter: TU-0649, TU-0650  
Weather: Clear

File Name : KapKal PM  
Site Code : 00000002  
Start Date : 10/23/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kalakaua Avenue Southbound						Kapiolani Boulevard Westbound						Kalakaua Avenue Northbound						Kapiolani Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
	03:00 PM	0	171	21	35	227	0	189	31	20	240	0	170	13	0	183	0	306	114	21	441	0	306	114	21
03:15 PM	0	228	21	43	292	0	184	40	20	244	0	226	7	0	233	0	273	116	16	405	0	273	116	16	405
03:30 PM	0	116	19	39	174	0	336	40	14	390	0	196	14	0	210	0	352	141	14	507	0	352	141	14	507
03:45 PM	0	212	27	33	272	0	208	44	13	265	0	203	8	0	211	0	314	151	21	486	0	314	151	21	486
<b>Total</b>	<b>0</b>	<b>727</b>	<b>88</b>	<b>150</b>	<b>965</b>	<b>0</b>	<b>917</b>	<b>155</b>	<b>67</b>	<b>1139</b>	<b>0</b>	<b>795</b>	<b>42</b>	<b>0</b>	<b>837</b>	<b>0</b>	<b>1245</b>	<b>522</b>	<b>72</b>	<b>1839</b>	<b>0</b>	<b>1245</b>	<b>522</b>	<b>72</b>	<b>1839</b>
04:00 PM	0	182	18	35	235	0	233	38	22	293	0	189	18	0	207	0	399	143	15	557	0	399	143	15	557
04:15 PM	0	168	29	39	236	0	250	40	20	310	0	210	14	0	224	0	382	159	29	570	0	382	159	29	570
04:30 PM	0	206	35	63	304	0	231	40	38	309	0	236	15	0	251	0	382	177	26	585	0	382	177	26	585
04:45 PM	0	173	18	54	245	0	239	39	19	297	0	224	12	0	236	0	394	185	23	602	0	394	185	23	602
<b>Total</b>	<b>0</b>	<b>729</b>	<b>100</b>	<b>191</b>	<b>1020</b>	<b>0</b>	<b>953</b>	<b>157</b>	<b>99</b>	<b>1209</b>	<b>0</b>	<b>859</b>	<b>59</b>	<b>0</b>	<b>918</b>	<b>0</b>	<b>1557</b>	<b>664</b>	<b>93</b>	<b>2314</b>	<b>0</b>	<b>1557</b>	<b>664</b>	<b>93</b>	<b>2314</b>
05:00 PM	0	187	28	42	257	0	252	39	30	321	0	214	15	0	229	0	401	195	34	630	0	401	195	34	630
05:15 PM	0	154	29	63	246	0	256	34	25	315	0	210	9	0	219	0	385	195	35	615	0	385	195	35	615
05:30 PM	0	198	33	66	297	0	199	36	36	271	0	195	20	0	215	0	353	141	38	532	0	353	141	38	532
05:45 PM	0	150	19	59	228	0	235	48	25	308	0	232	11	0	243	0	393	183	25	601	0	393	183	25	601
<b>Total</b>	<b>0</b>	<b>689</b>	<b>109</b>	<b>230</b>	<b>1028</b>	<b>0</b>	<b>942</b>	<b>157</b>	<b>116</b>	<b>1215</b>	<b>0</b>	<b>851</b>	<b>55</b>	<b>0</b>	<b>906</b>	<b>0</b>	<b>1532</b>	<b>714</b>	<b>132</b>	<b>2378</b>	<b>0</b>	<b>1532</b>	<b>714</b>	<b>132</b>	<b>2378</b>
<b>Grand Total</b>	<b>0</b>	<b>2145</b>	<b>297</b>	<b>571</b>	<b>3013</b>	<b>0</b>	<b>2812</b>	<b>469</b>	<b>282</b>	<b>3563</b>	<b>0</b>	<b>2505</b>	<b>156</b>	<b>0</b>	<b>2661</b>	<b>0</b>	<b>4334</b>	<b>1900</b>	<b>297</b>	<b>6531</b>	<b>0</b>	<b>4334</b>	<b>1900</b>	<b>297</b>	<b>6531</b>
<b>Approch %</b>	<b>0</b>	<b>71.2</b>	<b>9.9</b>	<b>19</b>	<b>19.1</b>	<b>0</b>	<b>78.9</b>	<b>13.2</b>	<b>7.9</b>	<b>22.6</b>	<b>0</b>	<b>94.1</b>	<b>5.9</b>	<b>0</b>	<b>16.9</b>	<b>0</b>	<b>66.4</b>	<b>29.1</b>	<b>4.5</b>	<b>41.4</b>	<b>0</b>	<b>66.4</b>	<b>29.1</b>	<b>4.5</b>	<b>41.4</b>
<b>Total %</b>	<b>0</b>	<b>13.6</b>	<b>1.9</b>	<b>3.6</b>	<b>19.1</b>	<b>0</b>	<b>17.8</b>	<b>3</b>	<b>1.8</b>	<b>22.6</b>	<b>0</b>	<b>15.9</b>	<b>1</b>	<b>0</b>	<b>16.9</b>	<b>0</b>	<b>27.5</b>	<b>12</b>	<b>1.9</b>	<b>41.4</b>	<b>0</b>	<b>27.5</b>	<b>12</b>	<b>1.9</b>	<b>41.4</b>

Start Time	Kalakaua Avenue Southbound						Kapiolani Boulevard Westbound						Kalakaua Avenue Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	04:30 PM	0	206	173	18	397	0	231	40	39	271	0	236	15	0	251	0	382	177	559	0	382	177	559
04:45 PM	0	173	18	19	191	0	239	39	39	278	0	224	12	0	236	0	394	185	579	0	394	185	579	
05:00 PM	0	187	28	28	215	0	252	39	39	291	0	214	15	0	229	0	401	195	596	0	401	195	596	
05:15 PM	0	154	29	29	183	0	256	34	34	290	0	210	9	0	219	0	385	195	580	0	385	195	580	
<b>Total Volume</b>	<b>0</b>	<b>720</b>	<b>110</b>	<b>110</b>	<b>830</b>	<b>0</b>	<b>978</b>	<b>152</b>	<b>1130</b>	<b>1130</b>	<b>0</b>	<b>884</b>	<b>51</b>	<b>0</b>	<b>935</b>	<b>0</b>	<b>1562</b>	<b>752</b>	<b>2314</b>	<b>0</b>	<b>1562</b>	<b>752</b>	<b>2314</b>	
<b>% App. Total</b>	<b>0.000</b>	<b>86.7</b>	<b>13.3</b>	<b>13.3</b>	<b>.861</b>	<b>0.000</b>	<b>86.5</b>	<b>13.5</b>	<b>.950</b>	<b>.971</b>	<b>0.000</b>	<b>94.5</b>	<b>5.5</b>	<b>0</b>	<b>.931</b>	<b>0.000</b>	<b>67.5</b>	<b>32.5</b>	<b>.964</b>	<b>0.000</b>	<b>67.5</b>	<b>32.5</b>	<b>.964</b>	
PHF																								

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, BE  
Counter: D4-3889, D4-3890  
Weather: Clear

File Name : KapMcC AM  
Site Code : 00000003  
Start Date : 10/23/2013  
Page No : 1

Groups Printed - Unshifted

Start Time	McCully Street Southbound						Kapiolani Boulevard Westbound						McCully Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	06:00 AM	3	79	7	11	100		34	148	6	9	197		8	102	14	9	133		1	46	6	3	56
06:15 AM	5	103	1	8	117		33	216	3	14	266		12	122	28	14	176		0	41	3	6	50	
06:30 AM	3	97	9	14	123		63	380	1	18	462		10	131	43	18	202		0	78	2	19	99	
06:45 AM	7	116	11	10	144		64	511	7	16	598		18	105	44	16	183		0	89	6	17	112	
<b>Total</b>	<b>18</b>	<b>395</b>	<b>28</b>	<b>43</b>	<b>484</b>		<b>194</b>	<b>1255</b>	<b>17</b>	<b>57</b>	<b>1523</b>		<b>48</b>	<b>460</b>	<b>129</b>	<b>57</b>	<b>694</b>		<b>1</b>	<b>254</b>	<b>17</b>	<b>45</b>	<b>317</b>	
07:00 AM	7	81	13	17	118		60	573	2	17	652		22	147	54	23	246		0	102	3	9	114	
07:15 AM	5	107	14	32	158		64	585	3	27	679		44	98	45	30	217		0	113	4	9	126	
07:30 AM	7	124	22	16	169		69	563	6	29	667		36	138	55	30	259		0	93	2	22	117	
07:45 AM	9	131	19	9	168		69	625	3	20	717		29	103	62	22	216		0	125	9	22	156	
<b>Total</b>	<b>28</b>	<b>443</b>	<b>68</b>	<b>74</b>	<b>613</b>		<b>262</b>	<b>2346</b>	<b>14</b>	<b>93</b>	<b>2715</b>		<b>131</b>	<b>486</b>	<b>216</b>	<b>105</b>	<b>938</b>		<b>0</b>	<b>433</b>	<b>18</b>	<b>62</b>	<b>513</b>	
08:00 AM	17	172	17	8	214		61	476	4	18	559		30	116	60	19	225		1	84	8	17	110	
08:15 AM	12	120	20	3	155		85	529	4	14	632		47	122	65	19	253		0	111	9	20	140	
08:30 AM	10	107	20	9	146		90	398	2	22	512		28	143	91	21	283		0	140	10	14	164	
08:45 AM	17	121	12	10	160		88	334	31	24	477		30	123	72	24	249		0	125	7	10	142	
<b>Total</b>	<b>56</b>	<b>520</b>	<b>69</b>	<b>30</b>	<b>675</b>		<b>324</b>	<b>1737</b>	<b>41</b>	<b>78</b>	<b>2180</b>		<b>135</b>	<b>504</b>	<b>288</b>	<b>83</b>	<b>1010</b>		<b>1</b>	<b>460</b>	<b>34</b>	<b>61</b>	<b>556</b>	
<b>Grand Total</b>	<b>102</b>	<b>1358</b>	<b>165</b>	<b>147</b>	<b>1772</b>		<b>780</b>	<b>5338</b>	<b>72</b>	<b>228</b>	<b>6418</b>		<b>314</b>	<b>1450</b>	<b>633</b>	<b>245</b>	<b>2642</b>		<b>2</b>	<b>1147</b>	<b>69</b>	<b>168</b>	<b>1386</b>	
Apprch %	5.8	76.6	9.3	8.3			12.2	83.2	1.1	3.6			11.9	54.9	24	9.3			0.1	82.8	5	12.1		
Total %	0.8	11.1	1.4	1.2	14.5		6.4	43.7	0.6	1.9	52.5		2.6	11.9	5.2	2	21.6		0	9.4	0.6	1.4	11.3	

Start Time	McCully Street Southbound						Kapiolani Boulevard Westbound						McCully Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	07:30 AM	7	124	22	153			69	563	6	638		36	138	55	229		0	93	2	95			
07:45 AM	9	131	19	159			69	625	3	697		29	103	62	194		0	125	9	134				
08:00 AM	17	172	17	206			61	476	4	541		30	116	60	206		1	84	8	93				
08:15 AM	12	120	20	152			85	529	4	618		47	122	65	234		0	111	9	120				
Total Volume	45	547	78	670			284	2193	17	2494		142	479	242	863		1	413	28	442				
% App. Total	6.7	81.6	11.6				11.4	87.9	0.7			16.5	55.5	28			0.2	93.4	6.3					
PHF	.662	.795	.886	.813			.835	.877	.708	.895		.755	.868	.931	.922		.250	.826	.778	.825			.944	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:30 AM



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:GC, BE  
Counter:D4-3889, D4-3890  
Weather:Clear

File Name : KapMcC PM  
Site Code : 00000003  
Start Date : 10/23/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	McCully Street Southbound						Kapiolani Boulevard Westbound						McCully Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
03:00 PM	8	147	15	23	193	8	178	8	20	214	29	166	79	26	300	14	298	14	7	333	1040			
03:15 PM	8	164	23	15	210	0	200	9	18	227	35	145	100	17	297	22	258	12	13	305	1039			
03:30 PM	9	173	10	30	222	0	188	13	24	225	31	152	74	28	285	19	299	15	19	352	1084			
03:45 PM	11	146	12	23	192	0	217	6	25	248	38	130	70	28	266	23	315	15	17	370	1076			
<b>Total</b>	<b>36</b>	<b>630</b>	<b>60</b>	<b>91</b>	<b>817</b>	<b>8</b>	<b>783</b>	<b>36</b>	<b>87</b>	<b>914</b>	<b>133</b>	<b>593</b>	<b>323</b>	<b>99</b>	<b>1148</b>	<b>78</b>	<b>1170</b>	<b>56</b>	<b>56</b>	<b>1360</b>	<b>4239</b>			
04:00 PM	8	182	17	26	233	0	180	6	31	217	39	143	92	30	304	20	333	23	18	394	1148			
04:15 PM	6	150	12	30	198	0	219	9	25	253	47	156	73	28	304	21	355	20	17	413	1168			
04:30 PM	7	166	11	19	203	0	195	14	24	233	55	132	71	27	285	40	329	30	15	414	1135			
04:45 PM	9	134	15	30	188	0	213	9	47	269	52	124	90	44	310	41	363	24	22	450	1217			
<b>Total</b>	<b>30</b>	<b>632</b>	<b>55</b>	<b>105</b>	<b>822</b>	<b>0</b>	<b>807</b>	<b>38</b>	<b>127</b>	<b>972</b>	<b>193</b>	<b>555</b>	<b>326</b>	<b>129</b>	<b>1203</b>	<b>122</b>	<b>1380</b>	<b>97</b>	<b>72</b>	<b>1671</b>	<b>4668</b>			
05:00 PM	16	145	17	44	222	0	206	7	35	248	50	163	71	24	308	38	355	18	20	431	1209			
05:15 PM	7	143	18	31	199	1	200	8	41	250	43	169	75	46	333	41	326	19	32	418	1200			
05:30 PM	9	146	14	46	215	0	186	14	34	234	45	136	77	33	291	38	354	22	18	432	1172			
05:45 PM	11	175	25	25	236	0	183	7	26	216	51	173	85	27	336	25	258	27	19	329	1117			
<b>Total</b>	<b>43</b>	<b>609</b>	<b>74</b>	<b>146</b>	<b>872</b>	<b>1</b>	<b>775</b>	<b>36</b>	<b>136</b>	<b>948</b>	<b>189</b>	<b>641</b>	<b>308</b>	<b>130</b>	<b>1268</b>	<b>142</b>	<b>1293</b>	<b>86</b>	<b>89</b>	<b>1610</b>	<b>4698</b>			
<b>Grand Total</b>	<b>109</b>	<b>1871</b>	<b>189</b>	<b>342</b>	<b>2511</b>	<b>9</b>	<b>2365</b>	<b>110</b>	<b>350</b>	<b>2834</b>	<b>515</b>	<b>1789</b>	<b>957</b>	<b>358</b>	<b>3619</b>	<b>342</b>	<b>3843</b>	<b>239</b>	<b>217</b>	<b>4641</b>	<b>13605</b>			
Apprch %	4.3	74.5	7.5	13.6	18.5	0.3	83.5	3.9	12.4	20.8	14.2	49.4	26.4	9.9	26.6	7.4	82.8	5.1	4.7	34.1				
Total %	0.8	13.8	1.4	2.5	18.5	0.1	17.4	0.8	2.6	20.8	3.8	13.1	7	2.6	26.6	2.5	28.2	1.8	1.6	34.1				

Start Time	McCully Street Southbound						Kapiolani Boulevard Westbound						McCully Street Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
04:15 PM	6	150	12	12	168	0	219	9	9	228	47	156	73	26	276	21	355	20	20	396	1068			
04:30 PM	7	166	11	11	184	0	195	14	14	209	55	132	71	258	40	329	30	399	20	30	399	1050		
04:45 PM	9	134	15	15	158	0	213	9	9	222	52	124	90	266	41	363	24	428	24	24	428	1074		
05:00 PM	16	145	17	17	178	0	206	7	7	213	50	163	71	284	38	355	18	411	18	18	411	1086		
Total Volume	38	595	55	55	688	0	833	39	39	872	204	575	305	1084	140	1402	92	1634	92	92	1634	4278		
% App. Total	5.5	86.5	8	8	935	0	95.5	4.5	4.5	956	18.8	53	28.1	8.6	85.8	8.6	85.8	5.6	5.6	954	.985			
PHF	.594	.896	.809	.809	.935	.000	.951	.696	.696	.956	.927	.882	.847	.847	.954	.854	.966	.767	.767	.954				

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: LH,KG  
Counter: D4-5674, D4-5673  
Weather: Clear

File Name : Kaplsen AM  
Site Code : 00000004  
Start Date : 10/23/2013  
Page No : 1

Start Time	Groups Printed- Unshifted																				
	Isenberg Street Southbound				Kapiolani Boulevard Westbound				Marco Polo Condominium Driveway Northbound				Kapiolani Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
06:00 AM	6	0	8	0	14	0	168	2	0	170	2	3	1	0	6	0	87	0	6	93	283
06:15 AM	5	0	8	1	14	0	237	2	0	239	6	2	2	0	10	0	71	0	2	73	336
06:30 AM	4	0	5	0	9	0	446	4	0	450	9	3	3	0	15	0	125	0	2	127	601
06:45 AM	10	2	8	1	21	0	536	4	0	540	1	7	7	0	15	0	149	0	7	156	732
Total	25	2	29	2	58	0	1387	12	0	1399	18	15	13	0	46	0	432	0	17	449	1952
07:00 AM	26	0	8	4	38	0	613	3	0	616	4	6	7	0	17	0	173	0	5	178	849
07:15 AM	25	0	25	0	50	0	632	0	0	632	2	10	14	0	26	0	181	0	20	201	909
07:30 AM	11	0	16	0	27	0	647	8	0	655	13	15	7	0	35	0	158	1	15	174	891
07:45 AM	12	0	14	0	26	0	602	9	0	611	11	8	10	0	29	0	186	0	9	195	861
Total	74	0	63	4	141	0	2494	20	0	2514	30	39	38	0	107	0	698	1	49	748	3510
08:00 AM	14	0	12	5	31	0	613	4	0	617	10	9	4	0	23	0	147	0	18	165	836
08:15 AM	10	0	25	3	38	0	509	3	0	512	26	1	1	0	28	0	189	0	17	209	787
08:30 AM	8	0	13	0	21	0	474	3	0	477	13	3	9	0	25	0	240	0	4	249	772
08:45 AM	5	0	23	0	28	0	410	10	0	420	7	5	9	0	21	0	198	0	7	205	674
Total	37	0	73	8	118	0	2006	20	0	2026	56	18	23	0	97	0	774	0	46	828	3069
Grand Total	136	2	165	14	317	0	5887	52	0	5939	104	72	74	0	250	0	1904	1	112	2025	8531
Approach %	42.9	0.6	52.1	4.4	3.7	0	99.1	0.9	0	69.6	41.6	28.8	29.6	0	2.9	0.4	94	0	5.5	23.7	
Total %	1.6	0	1.9	0.2	3.7	0	69	0.6	0	69.6	1.2	0.8	0.9	0	2.9	0.1	22.3	0	1.3	23.7	

Start Time	Kapiolani Boulevard Westbound												Marco Polo Condominium Driveway Northbound												Kapiolani Boulevard Eastbound											
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total											
	07:00 AM	26	0	8	0	34	0	613	3	0	616	4	6	7	0	17	0	173	0	0	173	0	0	0	0	0	173									
07:15 AM	25	0	25	0	50	0	632	0	0	632	2	10	14	0	26	0	181	0	0	181	0	0	0	0	181											
07:30 AM	11	0	16	0	27	0	647	8	0	655	13	15	7	0	35	0	158	1	0	159	0	0	0	0	159											
07:45 AM	12	0	14	0	26	0	602	9	0	611	11	8	10	0	29	0	186	0	0	186	0	0	0	0	186											
Total Volume	74	0	63	0	137	0	2494	20	0	2514	30	39	38	0	107	0	698	1	0	699	0	0	0	0	699											
% App. Total	54	0	46	0	685	0	99.2	0.8	0	960	28	36.4	35.5	0	764	0	99.9	0.1	0	99.9	0	0	0	0	99.9											
PHF	.712	.000	.630		.685	.000	.964	.556		.960	.577	.650	.679		.764	.000	.938	.250		.940					.972											

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: DS, KG  
Counter: D4-5674, D4-56743  
Weather: Clear

File Name : Kaplsen PM  
Site Code : 00000004  
Start Date : 10/23/2013  
Page No : 1

Start Time	Groups Printed- Unshifted																			
	Isenberg Street Southbound					Kapiolani Boulevard Westbound					Marco Polo Condominium Driveway Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
03:00 PM	19	9	9	3	40	0	236	12	15	263	17	56	8	0	81	36	302	24	7	369
03:15 PM	26	9	9	9	53	0	258	14	15	287	19	47	20	0	86	42	301	15	1	359
03:30 PM	25	13	8	8	54	0	258	9	16	283	13	31	7	0	51	25	289	13	2	329
03:45 PM	17	9	12	7	45	0	249	18	13	280	0	3	7	4	14	19	365	0	0	384
<b>Total</b>	<b>87</b>	<b>40</b>	<b>38</b>	<b>27</b>	<b>192</b>	<b>0</b>	<b>1001</b>	<b>53</b>	<b>59</b>	<b>1113</b>	<b>49</b>	<b>137</b>	<b>42</b>	<b>4</b>	<b>232</b>	<b>122</b>	<b>1257</b>	<b>52</b>	<b>10</b>	<b>1441</b>
04:00 PM	32	10	4	6	52	1	212	14	18	245	0	5	1	0	6	11	391	0	0	402
04:15 PM	32	9	3	3	47	0	226	6	22	254	1	3	0	0	4	10	380	0	0	390
04:30 PM	29	6	8	5	48	0	208	13	17	238	8	6	4	0	18	17	389	0	0	406
04:45 PM	25	15	9	10	59	0	208	15	19	242	3	6	4	0	13	13	426	0	0	439
<b>Total</b>	<b>118</b>	<b>40</b>	<b>24</b>	<b>24</b>	<b>206</b>	<b>1</b>	<b>854</b>	<b>48</b>	<b>76</b>	<b>979</b>	<b>12</b>	<b>20</b>	<b>9</b>	<b>0</b>	<b>41</b>	<b>51</b>	<b>1586</b>	<b>0</b>	<b>0</b>	<b>1637</b>
05:00 PM	29	10	9	13	61	0	211	19	35	265	2	5	3	0	10	11	393	1	0	405
05:15 PM	49	20	11	6	86	0	208	13	26	247	3	3	1	0	7	6	344	0	0	350
05:30 PM	41	15	6	12	74	0	209	8	20	237	6	3	0	0	9	9	387	0	0	396
05:45 PM	41	7	11	11	70	0	226	12	38	276	3	5	2	0	10	18	354	0	0	372
<b>Total</b>	<b>160</b>	<b>52</b>	<b>37</b>	<b>42</b>	<b>291</b>	<b>0</b>	<b>854</b>	<b>52</b>	<b>119</b>	<b>1025</b>	<b>14</b>	<b>16</b>	<b>6</b>	<b>0</b>	<b>36</b>	<b>44</b>	<b>1478</b>	<b>1</b>	<b>0</b>	<b>1523</b>
<b>Grand Total</b>	<b>365</b>	<b>132</b>	<b>99</b>	<b>93</b>	<b>689</b>	<b>1</b>	<b>2709</b>	<b>153</b>	<b>254</b>	<b>3117</b>	<b>75</b>	<b>173</b>	<b>57</b>	<b>4</b>	<b>309</b>	<b>217</b>	<b>4321</b>	<b>53</b>	<b>10</b>	<b>4601</b>
Approach %	53	19.2	14.4	13.5	7.9	0	86.9	4.9	8.1	24.3	24.3	56	18.4	1.3	3.5	4.7	93.9	1.2	0.2	52.8
Total %	4.2	1.5	1.1	1.1	7.9	0	31.1	1.8	2.9	35.8	0.9	2	0.7	0	3.5	2.5	49.6	0.6	0.1	52.8

Start Time	Isenberg Street Southbound										Kapiolani Boulevard Westbound					Marco Polo Condominium Driveway Northbound					Kapiolani Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total					
	03:00 PM	19	9	9	3	40	0	236	12	15	263	17	56	8	0	81	36	302	24	7	369				
03:15 PM	26	9	9	9	53	0	258	14	15	287	19	47	20	0	86	42	301	15	1	359					
03:30 PM	25	13	8	8	54	0	258	9	16	283	13	31	7	0	51	25	289	13	2	329					
03:45 PM	17	9	12	7	45	0	249	18	13	280	0	3	7	4	14	19	365	0	0	384					
<b>Total</b>	<b>87</b>	<b>40</b>	<b>38</b>	<b>27</b>	<b>192</b>	<b>0</b>	<b>1001</b>	<b>53</b>	<b>59</b>	<b>1113</b>	<b>49</b>	<b>137</b>	<b>42</b>	<b>4</b>	<b>232</b>	<b>122</b>	<b>1257</b>	<b>52</b>	<b>10</b>	<b>1441</b>					
04:00 PM	32	10	4	6	52	1	212	14	18	245	0	5	1	0	6	11	391	0	0	402					
04:15 PM	32	9	3	3	47	0	226	6	22	254	1	3	0	0	4	10	380	0	0	390					
04:30 PM	29	6	8	5	48	0	208	13	17	238	8	6	4	0	18	17	389	0	0	406					
04:45 PM	25	15	9	10	59	0	208	15	19	242	3	6	4	0	13	13	426	0	0	439					
<b>Total</b>	<b>118</b>	<b>40</b>	<b>24</b>	<b>24</b>	<b>206</b>	<b>1</b>	<b>854</b>	<b>48</b>	<b>76</b>	<b>979</b>	<b>12</b>	<b>20</b>	<b>9</b>	<b>0</b>	<b>41</b>	<b>51</b>	<b>1586</b>	<b>0</b>	<b>0</b>	<b>1637</b>					
05:00 PM	29	10	9	13	61	0	211	19	35	265	2	5	3	0	10	11	393	1	0	405					
05:15 PM	49	20	11	6	86	0	208	13	26	247	3	3	1	0	7	6	344	0	0	350					
05:30 PM	41	15	6	12	74	0	209	8	20	237	6	3	0	0	9	9	387	0	0	396					
05:45 PM	41	7	11	11	70	0	226	12	38	276	3	5	2	0	10	18	354	0	0	372					
<b>Total</b>	<b>160</b>	<b>52</b>	<b>37</b>	<b>42</b>	<b>291</b>	<b>0</b>	<b>854</b>	<b>52</b>	<b>119</b>	<b>1025</b>	<b>14</b>	<b>16</b>	<b>6</b>	<b>0</b>	<b>36</b>	<b>44</b>	<b>1478</b>	<b>1</b>	<b>0</b>	<b>1523</b>					
<b>Grand Total</b>	<b>365</b>	<b>132</b>	<b>99</b>	<b>93</b>	<b>689</b>	<b>1</b>	<b>2709</b>	<b>153</b>	<b>254</b>	<b>3117</b>	<b>75</b>	<b>173</b>	<b>57</b>	<b>4</b>	<b>309</b>	<b>217</b>	<b>4321</b>	<b>53</b>	<b>10</b>	<b>4601</b>					
Approach %	53	19.2	14.4	13.5	7.9	0	86.9	4.9	8.1	24.3	24.3	56	18.4	1.3	3.5	4.7	93.9	1.2	0.2	52.8					
Total %	4.2	1.5	1.1	1.1	7.9	0	31.1	1.8	2.9	35.8	0.9	2	0.7	0	3.5	2.5	49.6	0.6	0.1	52.8					

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:00 PM

Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
03:00 PM	19	9	9	3	40	0	236	12	15	263	17	56	8	0	81	36	302	24	7	369
03:15 PM	26	9	9	9	53	0	258	14	15	287	19	47	20	0	86	42	301	15	1	359
03:30 PM	25	13	8	8	54	0	258	9	16	283	13	31	7	0	51	25	289	13	2	329
03:45 PM	17	9	12	7	45	0	249	18	13	280	0	3	7	4	14	19	365	0	0	384
<b>Total Volume</b>	<b>87</b>	<b>40</b>	<b>38</b>	<b>27</b>	<b>192</b>	<b>0</b>	<b>1001</b>	<b>53</b>	<b>59</b>	<b>1113</b>	<b>49</b>	<b>137</b>	<b>42</b>	<b>4</b>	<b>228</b>	<b>122</b>	<b>1257</b>	<b>52</b>	<b>10</b>	<b>1431</b>
% App. Total	52.7	24.2	23	23	79.2	0	95	5	5	21.5	60.1	18.4	18.4	1.3	66.3	8.5	87.8	3.6	0.1	94.7
PHF	.837	.769	.792	.792	.897	.000	.970	.736	.736	.969	.645	.612	.525	.525	.663	.726	.861	.542	.542	.932

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Counted By: GC, PA  
Counter: D4-5675, TU-0652  
Weather: Clear

File Name : KapUni AM  
Site Code : 00000001  
Start Date : 10/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	University Avenue Southbound						Kapiolani Boulevard Westbound						University Avenue Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
06:00 AM	1	8	11	0	20	3	120	8	2	133	5	8	2	1	16	12	44	11	0	67	236			
06:15 AM	0	13	1	4	18	5	282	7	3	297	7	16	3	7	33	14	63	11	0	88	436			
06:30 AM	2	22	16	10	50	18	391	14	3	426	16	29	4	4	53	22	52	13	0	87	616			
06:45 AM	8	63	19	0	90	36	485	34	6	561	37	50	15	18	120	36	84	33	0	153	924			
Total	11	106	47	14	178	62	1278	63	14	1417	65	103	24	30	222	84	243	68	0	395	2212			
07:00 AM	3	75	26	2	106	55	498	32	5	590	50	96	21	7	174	39	107	34	1	181	1051			
07:15 AM	21	80	31	4	136	47	534	33	19	633	50	109	46	7	212	29	95	24	0	148	1129			
07:30 AM	11	68	45	16	140	37	613	20	31	701	54	90	42	12	198	34	103	25	0	162	1201			
07:45 AM	12	63	63	7	145	20	637	10	22	689	60	89	37	8	194	46	113	41	0	200	1228			
Total	47	286	165	29	527	159	2282	95	77	2613	214	384	146	34	778	148	418	124	1	691	4609			
08:00 AM	5	21	24	4	54	15	613	9	16	653	47	39	13	7	106	46	114	23	0	183	996			
08:15 AM	6	21	28	4	59	10	463	13	6	492	24	16	4	6	50	36	136	8	0	180	781			
08:30 AM	3	8	20	2	33	7	418	7	7	439	20	21	5	6	52	55	127	9	0	191	715			
08:45 AM	1	19	29	2	51	7	335	3	5	350	23	21	8	6	58	44	132	12	0	188	647			
Total	15	69	101	12	197	39	1829	32	34	1934	114	97	30	25	266	181	509	52	0	742	3139			
Grand Total	73	461	313	55	902	260	5389	190	125	5964	393	584	200	89	1266	413	1170	244	1	1828	9960			
Approch %	8.1	51.1	34.7	6.1		4.4	90.4	3.2	2.1		3.1	46.1	15.8	7		22.6	64	13.3	0.1					
Total %	0.7	4.6	3.1	0.6	9.1	2.6	54.1	1.9	1.3	59.9	3.9	5.9	2	0.9	12.7	4.1	11.7	2.4	0	18.4				

Start Time	University Avenue Southbound						Kapiolani Boulevard Westbound						University Avenue Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
07:00 AM	3	75	26	2	104	55	498	32	5	585	50	96	21	7	167	39	107	34	1	180	1036			
07:15 AM	21	80	31	4	132	47	534	33	19	614	50	109	46	7	205	29	95	24	0	148	1099			
07:30 AM	11	68	45	16	124	37	613	20	31	670	54	90	42	12	186	34	103	25	0	162	1142			
07:45 AM	12	63	63	7	138	20	637	10	22	667	60	89	37	8	186	46	113	41	0	200	1191			
Total Volume	47	286	165	29	498	159	2282	95	77	2536	214	384	146	34	744	148	418	124	1	690	4468			
% App. Total	9.4	57.4	33.1	6.1		6.3	90	3.7	2.1		28.8	51.6	19.6	7		21.4	60.6	18						
PHF	.560	.894	.655		.902	.723	.896	.720		.946	.892	.881	.793		.907	.804	.925	.756		.863	.938			

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:00 AM



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:GC, PA  
Counter:D4-5675, TU-0652  
Weather:Clear

File Name : KapUni PM  
Site Code : 00000001  
Start Date : 10/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	University Avenue Southbound						Kapiolani Boulevard Westbound						University Avenue Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
03:00 PM	15	27	28	4	74	24	192	1	9	226	18	24	10	17	69	45	244	40	0	329	698			
03:15 PM	16	21	25	3	65	32	200	3	2	237	11	25	18	6	60	35	298	52	0	385	747			
03:30 PM	23	27	23	4	77	30	208	7	5	250	22	39	13	5	79	33	316	38	0	387	793			
03:45 PM	16	30	22	2	70	18	191	7	2	218	14	22	7	13	56	38	338	37	0	413	757			
<b>Total</b>	<b>70</b>	<b>105</b>	<b>98</b>	<b>13</b>	<b>286</b>	<b>104</b>	<b>791</b>	<b>18</b>	<b>18</b>	<b>931</b>	<b>65</b>	<b>110</b>	<b>48</b>	<b>41</b>	<b>264</b>	<b>151</b>	<b>1196</b>	<b>167</b>	<b>0</b>	<b>1514</b>	<b>2995</b>			
04:00 PM	14	34	33	4	85	21	190	7	7	225	20	28	11	8	67	43	304	46	0	393	770			
04:15 PM	23	30	18	3	74	31	204	13	11	259	8	18	13	13	52	60	363	37	0	460	845			
04:30 PM	21	34	22	6	83	28	231	7	7	273	15	32	13	18	78	55	330	39	0	424	858			
04:45 PM	29	33	23	5	90	35	201	5	8	249	18	42	12	11	83	40	364	49	0	453	875			
<b>Total</b>	<b>87</b>	<b>131</b>	<b>96</b>	<b>18</b>	<b>332</b>	<b>115</b>	<b>826</b>	<b>32</b>	<b>33</b>	<b>1006</b>	<b>61</b>	<b>120</b>	<b>49</b>	<b>50</b>	<b>280</b>	<b>198</b>	<b>1361</b>	<b>171</b>	<b>0</b>	<b>1730</b>	<b>3348</b>			
05:00 PM	14	17	30	3	64	29	240	2	2	273	21	34	10	13	78	38	339	54	0	431	846			
05:15 PM	24	32	21	7	84	26	206	3	5	240	10	32	16	22	80	41	352	56	0	449	853			
05:30 PM	25	16	17	4	62	23	234	3	8	268	16	23	6	12	57	36	362	46	0	444	831			
05:45 PM	24	29	22	4	79	23	204	6	12	245	16	31	13	10	70	29	313	53	0	395	789			
<b>Total</b>	<b>87</b>	<b>94</b>	<b>90</b>	<b>18</b>	<b>289</b>	<b>101</b>	<b>884</b>	<b>14</b>	<b>27</b>	<b>1026</b>	<b>63</b>	<b>120</b>	<b>45</b>	<b>57</b>	<b>285</b>	<b>144</b>	<b>1366</b>	<b>209</b>	<b>0</b>	<b>1719</b>	<b>3319</b>			
<b>Grand Total</b>	<b>244</b>	<b>330</b>	<b>284</b>	<b>49</b>	<b>907</b>	<b>320</b>	<b>2501</b>	<b>64</b>	<b>78</b>	<b>2963</b>	<b>189</b>	<b>350</b>	<b>142</b>	<b>148</b>	<b>829</b>	<b>493</b>	<b>3923</b>	<b>547</b>	<b>0</b>	<b>4963</b>	<b>9662</b>			
<b>Approch %</b>	<b>26.9</b>	<b>36.4</b>	<b>31.3</b>	<b>5.4</b>	<b>9.4</b>	<b>10.8</b>	<b>84.4</b>	<b>2.2</b>	<b>2.6</b>	<b>30.7</b>	<b>22.8</b>	<b>42.2</b>	<b>17.1</b>	<b>17.9</b>	<b>8.6</b>	<b>9.9</b>	<b>79</b>	<b>11</b>	<b>0</b>	<b>51.4</b>				
<b>Total %</b>	<b>2.5</b>	<b>3.4</b>	<b>2.9</b>	<b>0.5</b>	<b>9.4</b>	<b>3.3</b>	<b>25.9</b>	<b>0.7</b>	<b>0.8</b>	<b>30.7</b>	<b>2</b>	<b>3.6</b>	<b>1.5</b>	<b>1.5</b>	<b>8.6</b>	<b>5.1</b>	<b>40.6</b>	<b>5.7</b>	<b>0</b>	<b>51.4</b>				

Start Time	University Avenue Southbound						Kapiolani Boulevard Westbound						University Avenue Northbound						Kapiolani Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
04:30 PM	21	34	33	22	77	28	231	7	7	266	15	32	13	13	60	55	330	39	0	424	827			
04:45 PM	29	33	23	3	85	35	201	5	5	241	18	42	12	12	72	40	364	49	0	453	851			
05:00 PM	14	17	30	3	61	29	240	2	2	271	21	34	10	10	65	38	339	54	0	431	828			
05:15 PM	24	32	21	7	84	26	206	3	8	268	16	23	6	12	57	36	362	46	0	444	831			
05:30 PM	24	29	22	4	79	23	204	6	12	245	16	31	13	10	70	29	313	53	0	395	789			
<b>Total</b>	<b>88</b>	<b>116</b>	<b>96</b>	<b>32</b>	<b>300</b>	<b>118</b>	<b>878</b>	<b>17</b>	<b>17</b>	<b>1013</b>	<b>64</b>	<b>140</b>	<b>51</b>	<b>51</b>	<b>255</b>	<b>174</b>	<b>1385</b>	<b>198</b>	<b>0</b>	<b>1757</b>	<b>3325</b>			
<b>% App. Total</b>	<b>29.3</b>	<b>38.7</b>	<b>32</b>	<b>.800</b>	<b>.882</b>	<b>11.6</b>	<b>86.7</b>	<b>1.7</b>	<b>1.7</b>	<b>.935</b>	<b>.762</b>	<b>.833</b>	<b>.797</b>	<b>.885</b>	<b>.855</b>	<b>.791</b>	<b>.951</b>	<b>.884</b>	<b>.970</b>	<b>.970</b>	<b>.977</b>			
<b>PHF</b>	<b>.759</b>	<b>.853</b>	<b>.800</b>	<b>.800</b>	<b>.882</b>	<b>.843</b>	<b>.915</b>	<b>.607</b>	<b>.607</b>	<b>.935</b>	<b>.762</b>	<b>.833</b>	<b>.797</b>	<b>.885</b>	<b>.855</b>	<b>.791</b>	<b>.951</b>	<b>.884</b>	<b>.970</b>	<b>.970</b>	<b>.977</b>			

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: MM, GL, DS  
Counter: TU-0649, TU-0650, TU-0651  
Weather: Clear

File Name : AM-1  
Site Code : 00000002  
Start Date : 10/24/2013  
Page No : 1

Start Time	Date Street										Groups Printed- Unshifted										Kapiolani Boulevard										
	Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kamoku Street Southbound					Westbound					Kamoku Street					To Date Street, Right = Right Turn To Date Street Northbound					Right = Right Turn To Kamoku Street Eastbound										
	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
06:00 AM	7	22	5	5	39	0	14	0	2	18	0	21	5	4	30	0	21	5	4	30	0	21	5	4	30	0	21	5	4	30	87
06:15 AM	4	26	25	4	59	0	21	0	2	25	0	52	4	1	57	0	52	4	1	57	0	52	4	1	57	0	52	4	1	57	141
06:30 AM	13	47	47	8	115	0	38	0	11	54	0	37	6	7	50	0	37	6	7	50	0	37	6	7	50	0	37	6	7	50	219
06:45 AM	10	54	57	7	128	0	47	0	11	65	0	72	3	5	80	0	72	3	5	80	0	72	3	5	80	0	72	3	5	80	273
Total	34	149	134	24	341	0	120	0	26	162	0	182	18	17	217	0	182	18	17	217	0	182	18	17	217	0	182	18	17	217	720
07:00 AM	10	49	50	3	112	0	41	0	14	58	0	83	4	7	94	0	83	4	7	94	0	83	4	7	94	0	83	4	7	94	264
07:15 AM	22	59	47	9	137	0	34	0	11	45	0	93	33	10	136	0	93	33	10	136	0	93	33	10	136	0	93	33	10	136	318
07:30 AM	22	50	52	15	139	0	33	0	13	53	0	127	5	5	137	0	127	5	5	137	0	127	5	5	137	0	127	5	5	137	329
07:45 AM	27	57	11	6	101	0	28	0	29	63	0	108	6	7	121	0	108	6	7	121	0	108	6	7	121	0	108	6	7	121	285
Total	81	215	160	33	489	0	136	0	67	219	0	411	48	29	488	0	411	48	29	488	0	411	48	29	488	0	411	48	29	488	1196
08:00 AM	17	45	14	7	83	0	27	0	19	49	0	97	8	4	109	0	97	8	4	109	0	97	8	4	109	0	97	8	4	109	241
08:15 AM	9	72	7	8	96	0	12	0	4	18	0	99	4	3	106	0	99	4	3	106	0	99	4	3	106	0	99	4	3	106	220
08:30 AM	13	37	7	4	61	0	13	0	6	22	0	89	2	2	93	0	89	2	2	93	0	89	2	2	93	0	89	2	2	93	176
08:45 AM	10	40	4	3	57	0	19	0	5	28	0	96	3	2	101	0	96	3	2	101	0	96	3	2	101	0	96	3	2	101	186
Total	49	194	32	22	297	0	71	0	34	117	0	381	17	11	409	0	381	17	11	409	0	381	17	11	409	0	381	17	11	409	823
Grand Total	164	558	326	79	1127	0	327	0	127	498	0	974	83	57	1114	0	974	83	57	1114	0	974	83	57	1114	0	974	83	57	1114	2739
Approch %	14.6	49.5	28.9	7		65.7	0	25.5	8.8		0	87.4	7.5	5.1		0	87.4	7.5	5.1		0	87.4	7.5	5.1		0	87.4	7.5	5.1		
Total %	6	20.4	11.9	2.9	41.1	0	11.9	0	4.6	18.2	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7	

Start Time	Date Street										Kapiolani Boulevard														
	Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kamoku Street Southbound					Westbound					Kamoku Street					Right = Right Turn To Kamoku Street Eastbound									
	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total				
07:00 AM	10	49	50	3	112	0	41	0	14	58	0	83	4	7	94	0	83	4	7	94	0	83	4	7	94
07:15 AM	22	59	47	9	137	0	34	0	11	45	0	93	33	10	136	0	93	33	10	136	0	93	33	10	136
07:30 AM	22	50	52	15	139	0	33	0	13	53	0	127	5	5	137	0	127	5	5	137	0	127	5	5	137
07:45 AM	27	57	11	6	101	0	28	0	29	63	0	108	6	7	121	0	108	6	7	121	0	108	6	7	121
Total	81	215	160	33	489	0	136	0	67	219	0	411	48	29	488	0	411	48	29	488	0	411	48	29	488
08:00 AM	17	45	14	7	83	0	27	0	19	49	0	97	8	4	109	0	97	8	4	109	0	97	8	4	109
08:15 AM	9	72	7	8	96	0	12	0	4	18	0	99	4	3	106	0	99	4	3	106	0	99	4	3	106
08:30 AM	13	37	7	4	61	0	13	0	6	22	0	89	2	2	93	0	89	2	2	93	0	89	2	2	93
08:45 AM	10	40	4	3	57	0	19	0	5	28	0	96	3	2	101	0	96	3	2	101	0	96	3	2	101
Total	49	194	32	22	297	0	71	0	34	117	0	381	17	11	409	0	381	17	11	409	0	381	17	11	409
Grand Total	164	558	326	79	1127	0	327	0	127	498	0	974	83	57	1114	0	974	83	57	1114	0	974	83	57	1114
Approch %	14.6	49.5	28.9	7		65.7	0	25.5	8.8		0	87.4	7.5	5.1		0	87.4	7.5	5.1		0	87.4	7.5	5.1	
Total %	6	20.4	11.9	2.9	41.1	0	11.9	0	4.6	18.2	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7

Start Time	Date Street										Kapiolani Boulevard														
	Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kamoku Street Southbound					Westbound					Kamoku Street					Right = Right Turn To Kamoku Street Eastbound									
	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total				
07:00 AM	10	49	50	3	112	0	41	0	14	58	0	83	4	7	94	0	83	4	7	94	0	83	4	7	94
07:15 AM	22	59	47	9	137	0	34	0	11	45	0	93	33	10	136	0	93	33	10	136	0	93	33	10	136
07:30 AM	22	50	52	15	139	0	33	0	13	53	0	127	5	5	137	0	127	5	5	137	0	127	5	5	137
07:45 AM	27	57	11	6	101	0	28	0	29	63	0	108	6	7	121	0	108	6	7	121	0	108	6	7	121
Total	81	215	160	33	489	0	136	0	67	219	0	411	48	29	488	0	411	48	29	488	0	411	48	29	488
08:00 AM	17	45	14	7	83	0	27	0	19	49	0	97	8	4	109	0	97	8	4	109	0	97	8	4	109
08:15 AM	9	72	7	8	96	0	12	0	4	18	0	99	4	3	106	0	99	4	3	106	0	99	4	3	106
08:30 AM	13	37	7	4	61	0	13	0	6	22	0	89	2	2	93	0	89	2	2	93	0	89	2	2	93
08:45 AM	10	40	4	3	57	0	19	0	5	28	0	96	3	2	101	0	96	3	2	101	0	96	3	2	101
Total	49	194	32	22	297	0	71	0	34	117	0	381	17	11	409	0	381	17	11	409	0	381	17	11	409
Grand Total	164	558	326	79	1127	0	327	0	127	498	0	974	83	57	1114	0	974	83	57	1114	0	974	83	57	1114
Approch %	14.6	49.5	28.9	7		65.7	0	25.5	8.8		0	87.4	7.5	5.1		0	87.4	7.5	5.1		0	87.4	7.5	5.1	
Total %	6	20.4	11.9	2.9	41.1	0	11.9	0	4.6	18.2	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7	0	35.6	3	2.1	40.7







# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: MM, GL, DS  
Counter: TU-0649, TU-0650, TU-0651  
Weather: Clear

File Name : AM-4  
Site Code : 00000002  
Start Date : 10/24/2013  
Page No : 1

Start Time	Groups Printed- Unshifted													
	Kapiolani Boulevard				Right To Kamoku Street Westbound				Left = Left Turn Turn To Kamoku Street Northbound				Eastbound	
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	App. Total	Int. Total
06:00 AM	0	0	0	0	0	0	3	0	0	0	3	0	0	3
06:15 AM	0	0	0	1	0	1	3	0	0	0	3	0	0	4
06:30 AM	0	0	0	1	0	1	9	0	0	0	9	0	0	10
06:45 AM	0	0	0	1	0	1	18	0	0	0	18	0	0	19
Total	0	0	0	3	0	3	33	0	0	0	33	0	0	36
07:00 AM	0	0	0	5	0	5	36	0	0	0	36	0	0	41
07:15 AM	0	0	0	0	0	0	32	0	0	0	32	0	0	32
07:30 AM	0	0	0	0	0	0	8	0	0	0	8	0	0	8
07:45 AM	0	0	0	1	0	1	8	0	0	0	8	0	0	9
Total	0	0	0	6	0	6	84	0	0	0	84	0	0	90
08:00 AM	0	0	0	0	0	0	7	0	0	0	7	0	0	7
08:15 AM	0	0	0	0	0	0	7	0	0	0	7	0	0	7
08:30 AM	0	0	0	0	0	0	3	0	0	0	3	0	0	3
08:45 AM	0	0	0	0	0	0	8	0	0	0	8	0	0	8
Total	0	0	0	0	0	0	25	0	0	0	25	0	0	25
Grand Total	0	0	0	9	0	9	142	0	0	0	142	0	0	151
Apprch %	0	0	0	100	0	6	100	0	0	0	94	0	0	94
Total %	0	0	0	6	0	6	94	0	0	0	94	0	0	94

Start Time	Kapiolani Boulevard													
	Southbound				Right = Right To Kamoku Street Westbound				Left = Left Turn Turn To Kamoku Street Northbound				Eastbound	
	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	App. Total	Int. Total
06:00 AM to 06:30 AM	0	0	0	0	0	1	9	0	0	0	9	0	0	10
06:30 AM to 06:45 AM	0	0	0	1	1	1	18	0	0	0	18	0	0	19
06:45 AM to 07:00 AM	0	0	0	5	5	5	36	0	0	0	36	0	0	41
07:00 AM to 07:15 AM	0	0	0	0	0	0	32	0	0	0	32	0	0	32
07:15 AM to 07:30 AM	0	0	0	7	7	7	95	0	0	0	95	0	0	102
07:30 AM to 07:45 AM	0	0	0	100	100	100	100	0	0	0	100	0	0	102
Total Volume	0	0	0	7	7	7	95	0	0	0	95	0	0	102
% App. Total	.000	.000	.000	.350	.350	.350	.660	.000	.000	.000	.660	.000	.000	.622
PHF	.000	.000	.000	.350	.350	.350	.660	.000	.000	.000	.660	.000	.000	.622

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: JL, NT, DY  
Counter: TU-0649, TU-0650, TU-0651  
Weather: Clear

File Name : PM-1  
Site Code : 00000002  
Start Date : 10/24/2013  
Page No : 1

Start Time	Date Street										Groups Printed- Unshifted										
	Left = Left Turn To Kapiolani Boulevard, Right - Right Turn To Kamoku Street Southbound					Westbound					Kamoku Street					Kapiolani Boulevard					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	16	61	26	5	108	0	29	0	30	0	59	0	196	9	218	0	196	9	13	218	385
03:15 PM	13	67	24	5	109	0	47	0	35	0	82	0	234	20	265	0	234	20	11	265	456
03:30 PM	14	81	17	3	115	0	29	0	24	0	53	0	240	12	263	0	240	12	11	263	431
03:45 PM	16	68	25	1	110	0	32	0	25	0	57	0	248	13	267	0	248	13	6	267	434
Total	59	277	92	14	442	0	137	0	114	0	251	0	918	54	1013	0	918	54	41	1013	1706
04:00 PM	14	70	17	7	108	0	49	0	29	0	78	0	273	14	295	0	273	14	8	295	481
04:15 PM	17	66	33	9	125	0	45	0	33	0	78	0	198	18	223	0	198	18	7	223	426
04:30 PM	14	67	26	4	111	0	28	0	37	0	65	0	244	16	267	0	244	16	7	267	443
04:45 PM	21	79	23	11	134	0	38	0	31	0	69	0	248	22	279	0	248	22	9	279	482
Total	66	282	99	31	478	0	160	0	130	0	290	0	963	70	1064	0	963	70	31	1064	1832
05:00 PM	21	63	25	10	119	0	37	0	43	0	80	0	249	21	277	0	249	21	7	277	476
05:15 PM	24	68	30	6	128	0	26	0	60	0	86	0	230	19	263	0	230	19	14	263	477
05:30 PM	24	65	20	7	116	0	29	0	27	0	56	0	257	26	292	0	257	26	9	292	464
05:45 PM	21	77	23	2	123	0	37	0	31	0	68	0	235	10	252	0	235	10	7	252	443
Total	90	273	98	25	486	0	129	0	161	0	290	0	971	76	1084	0	971	76	37	1084	1860
Grand Total	215	832	289	70	1406	0	426	0	405	0	831	0	2852	200	3161	0	2852	200	109	3161	5398
Approach %	15.3	59.2	20.6	5		0	51.3	0	48.7	0	15.4	0	90.2	6.3		0	90.2	6.3	3.4		
Total %	4	15.4	5.4	1.3	26	0	7.9	0	7.5	0		0	52.8	3.7	58.6	0	52.8	3.7	2		
Start Time	Date Street										Kapiolani Boulevard										
	Left = Left Turn To Kapiolani Boulevard, Right - Right Turn To Kamoku Street Southbound					Westbound					Kamoku Street					Kapiolani Boulevard					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:45 PM	21	79	23	23	123	0	38	0	31	0	69	0	248	22	270	0	248	22	22	270	462
05:00 PM	21	63	25	25	109	0	37	0	43	0	80	0	249	21	270	0	249	21	21	270	459
05:15 PM	24	68	20	30	122	0	26	0	60	0	86	0	230	19	249	0	230	19	19	249	457
05:30 PM	24	65	20	20	109	0	29	0	27	0	56	0	257	26	283	0	257	26	26	283	448
Total Volume	90	275	98	98	463	0	130	0	161	0	291	0	984	88	1072	0	984	88	88	1072	1826
% App. Total	19.4	59.4	21.2	21.2		0	44.7	0	55.3	0	15.4	0	91.8	8.2		0	91.8	8.2	8.2		
PHF	.938	.870	.817	.817	.941	.000	.855	.000	.671	.846	.846	.000	.957	.846	.947	.000	.957	.846	.846	.947	.988

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: JL, NT, DY  
Counter: TU-0649, TU-0650, TU-0651  
Weather: Clear

File Name : PM-2  
Site Code : 00000002  
Start Date : 10/24/2013  
Page No : 1

Start Time	Groups Printed- Unshifted																					
	Date Street Left = Left Turn To Kapiolani Boulevard, Right - Right Turn To Kapiolani Boulevard Southbound				Kapiolani Boulevard Westbound				Kamoku Street Left = Left Turn To Date Street, Right = Right Turn To Date Street Northbound				Kapiolani Boulevard Right = Right Turn To Date Street Eastbound									
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	13	0	28	0	0	0	83	0	0	0	0	0	41	83
03:15 PM	0	0	1	0	0	0	0	0	4	0	17	0	0	0	104	0	0	0	0	0	21	104
03:30 PM	0	0	4	0	0	0	0	0	17	0	32	0	0	0	81	0	0	0	0	0	49	81
03:45 PM	0	0	0	0	0	0	0	0	6	0	22	0	0	0	98	0	0	0	0	0	28	98
Total	0	0	5	0	0	0	0	0	40	0	99	0	0	0	366	0	0	0	0	0	139	366
04:00 PM	0	0	2	0	0	0	0	0	10	0	26	0	0	0	96	0	0	0	0	0	36	96
04:15 PM	0	0	10	0	0	0	0	0	37	0	19	0	0	0	100	0	0	0	0	0	56	100
04:30 PM	0	0	5	0	0	0	0	0	17	0	30	0	0	0	135	0	0	0	0	0	47	135
04:45 PM	0	0	3	0	0	0	0	0	11	0	20	0	0	0	123	0	0	0	0	0	31	123
Total	0	0	20	0	0	0	0	0	75	0	95	0	0	0	454	0	0	0	0	0	170	454
05:00 PM	0	0	3	0	0	0	0	0	11	0	22	0	0	0	140	0	0	0	0	0	33	140
05:15 PM	0	0	3	0	0	0	0	0	12	0	29	0	0	0	114	0	0	0	0	0	41	114
05:30 PM	0	0	5	0	0	0	0	0	10	0	21	0	0	0	129	0	0	0	0	0	31	129
05:45 PM	0	0	1	0	0	0	0	0	13	0	24	0	0	0	128	0	0	0	0	0	37	128
Total	0	0	12	0	0	0	0	0	46	0	96	0	0	0	511	0	0	0	0	0	142	511
Grand Total	0	0	37	0	0	0	0	0	161	0	290	0	0	0	1331	0	0	0	0	0	451	1331
Approach %	0	0	100	0	0	0	0	0	35.7	0	64.3	0	0	0	100	0	0	0	0	0	24.8	73.2
Total %	0	0	2	0	0	0	0	0	8.9	0	15.9	0	0	0	73.2	0	0	0	0	0	0	73.2

Start Time	Groups Printed- Unshifted																					
	Date Street Left = Left Turn To Kapiolani Boulevard, Right - Right Turn To Kapiolani Boulevard Southbound				Kapiolani Boulevard Westbound				Kamoku Street Left = Left Turn To Date Street, Right = Right Turn To Date Street Northbound				Kapiolani Boulevard Right = Right Turn To Date Street Eastbound									
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	App. Total	Int. Total
04:15 PM	0	0	10	0	0	0	0	0	37	0	19	0	0	0	100	0	0	0	0	0	56	100
04:30 PM	0	0	5	0	0	0	0	0	17	0	30	0	0	0	135	0	0	0	0	0	47	135
04:45 PM	0	0	3	0	0	0	0	0	11	0	22	0	0	0	140	0	0	0	0	0	33	140
05:00 PM	0	0	21	0	0	0	0	0	76	0	91	0	0	0	498	0	0	0	0	0	167	498
% App. Total	0	0	100	0	0	0	0	0	45.5	0	54.5	0	0	0	100	0	0	0	0	0	746	889
PHF	.000	.000	.525	.000	.000	.000	.000	.000	.514	.000	.758	.000	.000	.000	.889	.000	.000	.000	.000	.000	.746	.889

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: JL, NT, DY  
Counter: TU-0649, TU-0650, TU-0651  
Weather: Clear

File Name : PM-3  
Site Code : 00000002  
Start Date : 10/24/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Kamoku Street Road And Crosswalk Closed During PM For Construction Southbound				Kapiolani Boulevard Right = Right Turn To Date Street Westbound				Date Street Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kapiolani Boulevard Northbound				Eastbound			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	0	0	0	0	109	95	4	208	30	41	10	6	87	0	295
03:15 PM	0	0	0	0	0	177	62	7	246	49	45	9	4	107	0	353
03:30 PM	0	0	0	0	0	188	52	6	246	41	57	3	4	105	0	351
03:45 PM	0	0	0	0	0	169	52	13	234	50	56	1	4	111	0	345
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>643</b>	<b>261</b>	<b>30</b>	<b>934</b>	<b>170</b>	<b>199</b>	<b>23</b>	<b>18</b>	<b>410</b>	<b>0</b>	<b>1344</b>
04:00 PM	0	0	0	0	0	171	64	12	247	40	40	8	6	94	0	341
04:15 PM	0	0	0	0	0	142	55	14	211	42	58	2	11	113	0	324
04:30 PM	0	0	0	0	0	192	76	10	278	45	58	9	3	115	0	393
04:45 PM	0	0	0	0	0	188	80	1	269	44	72	9	3	128	0	397
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>693</b>	<b>275</b>	<b>37</b>	<b>1005</b>	<b>171</b>	<b>228</b>	<b>28</b>	<b>23</b>	<b>450</b>	<b>0</b>	<b>1455</b>
05:00 PM	0	0	0	0	0	220	77	11	308	32	71	1	2	106	0	414
05:15 PM	0	0	0	0	0	192	62	2	256	35	71	12	0	118	0	374
05:30 PM	0	0	0	0	0	185	57	4	246	60	49	12	7	128	0	374
05:45 PM	0	0	0	0	0	187	55	0	242	42	43	6	0	91	0	333
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>784</b>	<b>251</b>	<b>17</b>	<b>1052</b>	<b>169</b>	<b>234</b>	<b>31</b>	<b>9</b>	<b>443</b>	<b>0</b>	<b>1495</b>
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2120</b>	<b>787</b>	<b>84</b>	<b>2991</b>	<b>510</b>	<b>661</b>	<b>82</b>	<b>50</b>	<b>1303</b>	<b>0</b>	<b>4294</b>
<b>Approch %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70.9</b>	<b>26.3</b>	<b>2.8</b>	<b>39.1</b>	<b>39.1</b>	<b>50.7</b>	<b>6.3</b>	<b>3.8</b>	<b>15.4</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>49.4</b>	<b>18.3</b>	<b>2</b>	<b>69.7</b>	<b>11.9</b>	<b>15.4</b>	<b>1.9</b>	<b>1.2</b>	<b>30.3</b>	<b>0</b>	<b>0</b>

Start Time	Kamoku Street Road And Crosswalk Closed During PM For Construction Southbound				Kapiolani Boulevard Right = Right Turn To Date Street Westbound				Date Street Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kapiolani Boulevard Northbound				Eastbound			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:30 PM	0	0	0	0	0	192	76	76	268	45	58	9	9	112	0	380
04:45 PM	0	0	0	0	0	188	80	80	268	44	72	9	9	125	0	393
05:00 PM	0	0	0	0	0	220	77	77	297	32	71	104	1	104	0	401
05:15 PM	0	0	0	0	0	192	62	62	254	35	71	12	12	118	0	372
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>792</b>	<b>295</b>	<b>295</b>	<b>1087</b>	<b>156</b>	<b>272</b>	<b>31</b>	<b>31</b>	<b>459</b>	<b>0</b>	<b>1546</b>
<b>% App. Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>.000</b>	<b>.900</b>	<b>.922</b>	<b>.922</b>	<b>.915</b>	<b>.867</b>	<b>.944</b>	<b>.646</b>	<b>.646</b>	<b>.918</b>	<b>.000</b>	<b>.964</b>
PHF																

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM





# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:MM,BE  
Counter:D4-5675, D4-3890  
Weather:Clear

File Name : WarKin AM  
Site Code : 00000005  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound						Kinau Street Westbound						Ward Avenue Northbound						Kinau Street Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
06:00 AM	15	80	0	2	97	0	0	0	8	8	0	0	37	2	2	4	43	28	229	131	1	389	537	
06:15 AM	19	97	0	2	118	0	0	0	6	6	0	0	34	2	11	11	47	28	242	114	12	396	567	
06:30 AM	20	146	0	3	169	0	0	0	14	14	0	0	58	1	8	8	67	37	262	110	21	430	680	
06:45 AM	26	167	0	6	199	0	0	0	14	14	0	0	65	4	8	8	77	33	246	79	26	384	674	
Total	80	490	0	13	583	0	0	0	42	42	0	0	194	9	31	31	234	126	979	434	60	1599	2458	
07:00 AM	34	175	0	6	215	0	0	0	12	12	0	0	77	2	16	16	95	48	247	83	16	394	716	
07:15 AM	54	197	0	4	255	0	0	0	19	19	0	0	100	3	16	16	119	55	313	90	17	475	868	
07:30 AM	51	237	0	9	297	0	0	0	16	16	0	0	100	3	22	22	125	55	297	80	40	472	910	
07:45 AM	43	180	0	10	233	0	0	0	18	18	0	0	90	5	17	17	112	57	263	77	28	425	788	
Total	182	789	0	29	1000	0	0	0	65	65	0	0	367	13	71	71	451	215	1120	330	101	1766	3282	
08:00 AM	46	224	0	3	273	0	0	0	18	18	0	0	73	6	4	4	83	37	249	87	13	386	760	
08:15 AM	36	227	0	6	269	0	0	0	16	16	0	0	81	3	8	8	92	36	230	86	11	363	740	
08:30 AM	22	136	0	6	164	0	0	0	13	13	0	0	76	6	5	5	87	25	280	95	16	416	680	
08:45 AM	26	109	0	2	137	0	0	0	11	11	0	0	87	6	11	11	104	36	262	59	9	366	618	
Total	130	696	0	17	843	0	0	0	58	58	0	0	317	21	28	28	366	134	1021	327	49	1531	2798	
Grand Total	392	1975	0	59	2426	0	0	0	165	165	0	0	878	43	130	130	1051	475	3120	1091	210	4896	8538	
Approch %	16.2	81.4	0	2.4		0	0	0	100		0	0	83.5	4.1	12.4		12.3	9.7	63.7	22.3	4.3			
Total %	4.6	23.1	0	0.7	28.4	0	0	0	1.9	1.9	0	0	10.3	0.5	1.5		12.3	5.6	36.5	12.8	2.5		57.3	

Start Time	Ward Avenue Southbound						Kinau Street Westbound						Ward Avenue Northbound						Kinau Street Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
07:15 AM	54	197	0	0	251	0	0	0	0	0	0	0	100	3	3	3	103	55	313	90	458	812		
07:30 AM	51	237	0	0	288	0	0	0	0	0	0	0	100	3	3	3	103	55	297	80	432	823		
07:45 AM	43	180	0	0	223	0	0	0	0	0	0	0	90	5	5	5	95	57	263	77	397	715		
08:00 AM	46	224	0	0	270	0	0	0	0	0	0	0	73	6	6	6	79	37	249	87	373	722		
Total Volume	194	838	0	0	1032	0	0	0	0	0	0	0	363	17	17	17	380	204	1122	334	1660	3072		
% App. Total	18.8	81.2	0	0		0	0	0	0	0	0	0	95.5	4.5			.922	12.3	67.6	20.1	.928		.933	
PHF	.898	.884	.000	.000	.896	.000	.000	.000	.000	.000	.000	.000	.908	.708			.922	.895	.896	.928	.906			

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:MM, KG  
Counter:D4-5675, D4-3890  
Weather:Clear

File Name : WarKin PM  
Site Code : 00000005  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound					Kinau Street Westbound					Ward Avenue Northbound					Kinau Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	03:00 PM	36	84	0	3	123	0	0	0	11	11	0	177	6	10	193	81	237	66	7
03:15 PM	32	76	0	1	109	0	0	0	10	10	0	208	7	6	221	78	234	89	12	413
03:30 PM	23	84	0	5	112	0	0	0	8	8	0	209	6	13	228	83	245	97	16	441
03:45 PM	27	88	0	4	119	0	0	0	14	14	0	209	10	7	226	96	246	86	9	437
<b>Total</b>	118	332	0	13	463	0	0	0	43	43	0	803	29	36	868	338	962	338	44	1682
04:00 PM	27	98	0	1	126	0	0	0	9	9	0	215	7	5	227	89	268	106	27	490
04:15 PM	23	78	0	4	105	0	0	0	10	10	0	231	4	5	240	81	259	113	11	464
04:30 PM	25	120	0	1	146	0	0	0	24	24	0	211	7	14	232	99	287	103	7	496
04:45 PM	23	92	0	0	115	0	0	0	13	13	0	245	5	14	264	111	261	89	31	492
<b>Total</b>	98	388	0	6	492	0	0	0	56	56	0	902	23	38	963	380	1075	411	76	1942
05:00 PM	25	91	0	1	117	0	0	0	14	14	0	226	14	13	253	103	204	90	24	421
05:15 PM	42	89	0	1	132	0	0	0	11	11	0	239	4	11	254	119	216	101	15	451
05:30 PM	27	87	0	0	114	0	0	0	14	14	0	217	13	7	237	88	244	83	3	418
05:45 PM	39	110	0	0	149	0	0	0	9	9	0	231	5	7	243	84	211	118	6	419
<b>Total</b>	133	377	0	2	512	0	0	0	48	48	0	913	36	38	987	394	875	392	48	1709
<b>Grand Total</b>	349	1097	0	21	1467	0	0	0	147	147	0	2618	88	112	2818	1112	2912	1141	168	5333
Approch %	23.8	74.8	0	1.4	15	0	0	0	100	100	0	92.9	3.1	4	28.9	20.9	54.6	21.4	3.2	17.7
Total %	3.6	11.2	0	0.2	15	0	0	0	1.5	1.5	0	26.8	0.9	1.1	28.9	11.4	29.8	11.7	1.7	54.6

Start Time	Ward Avenue Southbound					Kinau Street Westbound					Ward Avenue Northbound					Kinau Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	04:00 PM	27	98	0	0	125	0	0	0	0	0	0	215	7	7	222	89	268	106	463
04:15 PM	23	78	0	0	101	0	0	0	0	0	0	231	4	4	235	81	259	113	453	
04:30 PM	25	120	0	0	145	0	0	0	0	0	0	211	7	7	218	99	287	103	489	
04:45 PM	23	92	0	0	115	0	0	0	0	0	0	245	5	5	250	111	261	89	461	
Total Volume	98	388	0	0	486	0	0	0	0	0	0	902	23	23	925	380	1075	411	1866	
% App. Total	20.2	79.8	0	0	15	0	0	0	0	0	0	97.5	2.5	2.5	28.9	20.4	57.6	22	18.66	
PHF	.907	.808	.000	.000	.838	.000	.000	.000	.000	.000	.000	.920	.821	.821	.925	.856	.936	.909	.954	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:00 PM





# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, PA  
Counter: D4-3889, D4-3888  
Weather: Clear

File Name : WarBer PM  
Site Code : 00000004  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound						S. Beretania Street Westbound						Ward Avenue Northbound						S. Beretania Street Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
	03:00 PM	0	100	18	9	127	53	325	25	9	412	0	142	0	16	158	0	0	0	11	11	0	0	0	0
03:15 PM	0	144	34	9	187	67	440	30	15	552	1	190	0	10	201	0	0	0	13	13	0	0	0	0	953
03:30 PM	0	138	32	14	184	69	433	43	9	554	0	174	0	15	189	0	0	0	24	24	0	0	0	0	951
03:45 PM	0	136	30	15	181	78	482	47	12	619	0	164	0	8	172	0	0	0	24	24	0	0	0	0	996
Total	0	518	114	47	679	267	1680	145	45	2137	1	670	0	49	720	0	0	0	72	72	0	0	0	0	3608
04:00 PM	0	151	55	12	218	88	403	36	11	538	0	208	0	10	218	0	0	0	10	10	0	0	0	0	984
04:15 PM	0	151	37	6	194	89	474	37	7	607	0	190	0	10	200	0	0	0	12	12	0	0	0	0	1013
04:30 PM	0	178	38	23	239	81	502	62	25	670	0	189	0	14	203	0	0	0	21	21	0	0	0	0	1133
04:45 PM	0	152	35	16	203	92	487	71	16	666	0	173	0	19	192	0	0	0	29	29	0	0	0	0	1090
Total	0	632	165	57	854	350	1866	206	59	2481	0	760	0	53	813	0	0	0	72	72	0	0	0	0	4220
05:00 PM	0	153	30	18	201	72	457	88	21	638	0	146	0	4	150	0	0	0	10	10	0	0	0	0	999
05:15 PM	0	162	22	11	195	69	427	75	16	587	0	161	0	8	169	0	0	0	7	7	0	0	0	0	958
05:30 PM	0	155	22	13	190	68	374	78	18	538	0	119	0	15	134	0	0	0	11	11	0	0	0	0	873
05:45 PM	0	171	31	9	211	68	350	54	17	489	0	166	0	13	179	0	0	0	11	11	0	0	0	0	890
Total	0	641	105	51	797	277	1608	295	72	2252	0	592	0	40	632	0	0	0	39	39	0	0	0	0	3720
Grand Total	0	1791	384	155	2330	894	5154	646	176	6870	1	2022	0	142	2165	0	0	0	183	183	0	0	0	0	11548
Approach %	0	76.9	16.5	6.7		13	75	9.4	2.6		0	93.4	0	6.6		0	0	0	100	100	0	0	0	0	
Total %	0	15.5	3.3	1.3	20.2	7.7	44.6	5.6	1.5	59.5	0	17.5	0	1.2	18.7	0	0	0	1.6	1.6	0	0	0	0	1.6

Start Time	Ward Avenue Southbound						S. Beretania Street Westbound						Ward Avenue Northbound						S. Beretania Street Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
	04:15 PM	0	151	37		188	89	474	37		600	0	190	0		190	0	0	0	0	0	0	0	0	0
04:30 PM	0	178	38		216	81	502	62		645	0	189	0		189	0	0	0	0	0	0	0	0	0	1050
04:45 PM	0	152	35		187	92	487	71		660	0	173	0		173	0	0	0	0	0	0	0	0	0	1010
05:00 PM	0	153	30		183	72	457	88		617	0	146	0		146	0	0	0	0	0	0	0	0	0	946
Total Volume	0	634	140		774	334	1920	258		2512	0	698	0		698	0	0	0	0	0	0	0	0	0	3984
% App. Total	0	81.9	18.1		.896	13.3	76.4	10.3		.966	.000	.918	.000		.918	.000	.000	.000	.000	.000	.000	.000	.000	.000	.949
PHF	.000	.890	.921			.908	.956	.733			.000	.918	.000		.918	.000	.000	.000	.000	.000	.000	.000	.000	.000	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: MA  
Counter: TU-0654  
Weather: Clear

File Name : WarHot AM  
Site Code : 00000003  
Start Date : 10/16/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Ward Avenue Southbound				Westbound				Ward Avenue Northbound				Hotel Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	105	48	1	154	0	33	0	0	33	4	0	2	23	29	4	0	2	23	29	216
06:15 AM	0	125	59	4	188	1	27	0	4	32	6	0	2	22	30	6	0	2	22	30	250
06:30 AM	0	148	54	5	207	1	52	0	2	55	3	0	10	44	57	3	0	10	44	57	319
06:45 AM	0	162	87	1	250	2	68	0	4	74	2	0	3	34	39	2	0	3	34	39	363
<b>Total</b>	<b>0</b>	<b>540</b>	<b>248</b>	<b>11</b>	<b>799</b>	<b>4</b>	<b>180</b>	<b>0</b>	<b>10</b>	<b>194</b>	<b>15</b>	<b>0</b>	<b>17</b>	<b>123</b>	<b>155</b>	<b>15</b>	<b>0</b>	<b>17</b>	<b>123</b>	<b>155</b>	<b>1148</b>
07:00 AM	0	190	62	1	253	1	80	0	3	84	4	0	6	21	31	4	0	6	21	31	368
07:15 AM	0	177	74	3	254	1	101	0	5	107	1	0	2	34	37	1	0	2	34	37	398
07:30 AM	0	196	89	4	289	4	101	0	1	106	5	0	4	34	43	5	0	4	34	43	438
07:45 AM	0	184	80	4	268	1	79	0	8	88	5	0	3	50	58	5	0	3	50	58	414
<b>Total</b>	<b>0</b>	<b>747</b>	<b>305</b>	<b>12</b>	<b>1064</b>	<b>7</b>	<b>361</b>	<b>0</b>	<b>17</b>	<b>385</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>139</b>	<b>169</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>139</b>	<b>169</b>	<b>1618</b>
08:00 AM	0	245	76	3	324	0	79	0	3	82	4	0	9	28	41	4	0	9	28	41	447
08:15 AM	0	188	58	2	248	8	86	0	6	100	5	0	8	22	35	8	0	8	22	35	383
08:30 AM	0	177	50	1	228	5	83	0	3	91	2	0	7	22	31	2	0	7	22	31	350
08:45 AM	0	138	50	3	191	7	89	0	3	99	7	0	4	25	36	7	0	4	25	36	326
<b>Total</b>	<b>0</b>	<b>748</b>	<b>234</b>	<b>9</b>	<b>991</b>	<b>20</b>	<b>337</b>	<b>0</b>	<b>15</b>	<b>372</b>	<b>18</b>	<b>0</b>	<b>28</b>	<b>97</b>	<b>143</b>	<b>18</b>	<b>0</b>	<b>28</b>	<b>97</b>	<b>143</b>	<b>1506</b>
<b>Grand Total</b>	<b>0</b>	<b>2035</b>	<b>787</b>	<b>32</b>	<b>2854</b>	<b>31</b>	<b>878</b>	<b>0</b>	<b>42</b>	<b>951</b>	<b>48</b>	<b>0</b>	<b>60</b>	<b>359</b>	<b>467</b>	<b>48</b>	<b>0</b>	<b>60</b>	<b>359</b>	<b>467</b>	<b>4272</b>
<b>Approch %</b>	<b>0</b>	<b>71.3</b>	<b>27.6</b>	<b>1.1</b>	<b>66.8</b>	<b>3.3</b>	<b>92.3</b>	<b>0</b>	<b>4.4</b>	<b>22.3</b>	<b>10.3</b>	<b>0</b>	<b>12.8</b>	<b>76.9</b>	<b>10.9</b>	<b>1.1</b>	<b>0</b>	<b>1.4</b>	<b>8.4</b>	<b>10.9</b>	
<b>Total %</b>	<b>0</b>	<b>47.6</b>	<b>18.4</b>	<b>0.7</b>	<b>66.8</b>	<b>0.7</b>	<b>20.6</b>	<b>0</b>	<b>1</b>	<b>22.3</b>	<b>1.1</b>	<b>0</b>	<b>1.4</b>	<b>8.4</b>	<b>10.9</b>	<b>1.1</b>	<b>0</b>	<b>1.4</b>	<b>8.4</b>	<b>10.9</b>	

Start Time	Ward Avenue Southbound				Westbound				Ward Avenue Northbound				Hotel Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:15 AM	0	177	74	74	251	1	101	0	0	102	1	0	0	2	3	1	0	0	2	3	356
07:30 AM	0	196	89	89	285	4	101	0	0	105	5	0	4	4	9	5	0	4	4	9	399
07:45 AM	0	184	80	80	264	1	79	0	0	80	5	0	3	3	8	5	0	3	3	8	352
08:00 AM	0	245	76	76	321	0	79	0	0	79	4	0	0	9	13	4	0	0	9	13	413
<b>Total Volume</b>	<b>0</b>	<b>802</b>	<b>319</b>	<b>319</b>	<b>1121</b>	<b>6</b>	<b>360</b>	<b>0</b>	<b>0</b>	<b>366</b>	<b>15</b>	<b>0</b>	<b>18</b>	<b>18</b>	<b>33</b>	<b>15</b>	<b>0</b>	<b>18</b>	<b>18</b>	<b>33</b>	<b>1520</b>
<b>% App. Total</b>	<b>0</b>	<b>71.5</b>	<b>28.5</b>	<b>.896</b>	<b>.873</b>	<b>1.6</b>	<b>98.4</b>	<b>0</b>	<b>.000</b>	<b>.871</b>	<b>45.5</b>	<b>0</b>	<b>54.5</b>	<b>54.5</b>	<b>.635</b>	<b>45.5</b>	<b>0</b>	<b>54.5</b>	<b>54.5</b>	<b>.635</b>	<b>.920</b>
<b>PHF</b>	<b>.000</b>	<b>.818</b>	<b>.896</b>	<b>.896</b>	<b>.873</b>	<b>.375</b>	<b>.891</b>	<b>.000</b>	<b>.000</b>	<b>.871</b>	<b>.750</b>	<b>.000</b>	<b>.500</b>	<b>.500</b>	<b>.635</b>	<b>.750</b>	<b>.000</b>	<b>.500</b>	<b>.500</b>	<b>.635</b>	<b>.920</b>

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:KT, BC  
Counter:TU-0654, TU-0653  
Weather:Clear

File Name : WarHot PM  
Site Code : 00000003  
Start Date : 10/16/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Ward Avenue Southbound					Westbound					Ward Avenue Northbound					Hotel Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	133	50	2	185	0	149	0	10	175	14	0	11	22	47	14	0	11	22	47	407
03:15 PM	0	150	50	2	202	0	172	0	9	192	10	0	12	22	44	10	0	12	22	44	438
03:30 PM	0	164	38	3	205	0	168	0	7	185	10	0	15	40	65	10	0	15	40	65	455
03:45 PM	0	182	39	3	224	0	163	0	2	165	4	0	13	24	41	4	0	13	24	41	430
<b>Total</b>	<b>0</b>	<b>629</b>	<b>177</b>	<b>10</b>	<b>816</b>	<b>0</b>	<b>652</b>	<b>0</b>	<b>28</b>	<b>717</b>	<b>38</b>	<b>0</b>	<b>51</b>	<b>108</b>	<b>197</b>	<b>38</b>	<b>0</b>	<b>51</b>	<b>108</b>	<b>197</b>	<b>1730</b>
04:00 PM	0	190	52	5	247	0	171	0	3	177	18	0	13	46	77	18	0	13	46	77	501
04:15 PM	0	185	44	3	232	0	184	0	5	195	15	0	16	20	51	15	0	16	20	51	478
04:30 PM	0	225	39	7	271	0	146	0	9	162	20	0	17	43	80	7	0	17	43	80	513
04:45 PM	0	210	31	8	249	0	138	0	6	147	26	0	27	30	83	26	0	27	30	83	479
<b>Total</b>	<b>0</b>	<b>810</b>	<b>166</b>	<b>23</b>	<b>999</b>	<b>0</b>	<b>639</b>	<b>0</b>	<b>23</b>	<b>681</b>	<b>79</b>	<b>0</b>	<b>73</b>	<b>139</b>	<b>291</b>	<b>79</b>	<b>0</b>	<b>73</b>	<b>139</b>	<b>291</b>	<b>1971</b>
05:00 PM	0	190	26	3	219	0	143	0	8	155	13	0	19	30	62	13	0	19	30	62	436
05:15 PM	0	202	21	1	224	0	160	0	7	171	6	0	12	19	37	6	0	12	19	37	432
05:30 PM	0	193	22	3	218	0	140	0	8	160	6	0	10	27	43	6	0	10	27	43	421
05:45 PM	0	214	19	2	235	0	179	0	5	195	8	0	11	9	28	8	0	11	9	28	458
<b>Total</b>	<b>0</b>	<b>799</b>	<b>88</b>	<b>9</b>	<b>896</b>	<b>0</b>	<b>622</b>	<b>0</b>	<b>28</b>	<b>681</b>	<b>33</b>	<b>0</b>	<b>52</b>	<b>85</b>	<b>170</b>	<b>33</b>	<b>0</b>	<b>52</b>	<b>85</b>	<b>170</b>	<b>1747</b>
<b>Grand Total</b>	<b>0</b>	<b>2238</b>	<b>431</b>	<b>42</b>	<b>2711</b>	<b>0</b>	<b>1913</b>	<b>0</b>	<b>79</b>	<b>2079</b>	<b>150</b>	<b>0</b>	<b>176</b>	<b>332</b>	<b>658</b>	<b>150</b>	<b>0</b>	<b>176</b>	<b>332</b>	<b>658</b>	<b>5448</b>
Approch %	0	82.6	15.9	1.5	49.8	0	92	0	3.8	38.2	22.8	0	26.7	50.5	12.1	2.8	0	3.2	6.1	12.1	
Total %	0	41.1	7.9	0.8	49.8	0	35.1	0	1.5	38.2	2.8	0	3.2	6.1	12.1	2.8	0	3.2	6.1	12.1	

Start Time	Ward Avenue Southbound					Westbound					Ward Avenue Northbound					Hotel Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	190	52	5	242	0	171	0	3	174	18	0	13	31	31	18	0	13	31	31	447
04:15 PM	0	185	44	4	229	0	184	0	0	190	15	0	16	31	450	15	0	16	31	31	450
04:30 PM	0	225	39	3	264	0	146	0	7	153	20	0	17	37	454	7	0	17	37	37	454
04:45 PM	0	210	31	3	241	0	138	0	0	141	26	0	27	53	435	3	0	27	53	53	435
Total Volume	0	810	166	17	976	0	639	0	19	658	79	0	73	152	1786	29	0	73	152	152	1786
% App. Total	0	83	17	1.7	924	0	97.1	0	2.9	866	52	0	48	48	983	2.9	0	48	48	48	983
PHF	.000	.900	.798	.798	.924	.000	.868	.000	.000	.866	.760	.000	.676	.717	.983	.760	.000	.676	.717	.717	.983

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:00 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GL, CY  
Counter: TU-0651, TU-0652  
Weather: Clear

File Name : WarKin AM  
Site Code : 00000002  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
	06:00 AM	0	98	0	20	118	0	0	0	19	19	0	14	20	23	57	19	132	14	24	189
06:15 AM	0	116	0	33	149	0	0	0	33	33	0	13	36	30	79	12	209	4	36	261	522
06:30 AM	0	153	0	56	209	0	0	0	47	47	0	26	42	43	111	27	282	21	38	368	735
06:45 AM	0	155	0	31	186	0	0	0	44	44	0	42	51	59	152	26	325	19	55	425	807
<b>Total</b>	<b>0</b>	<b>522</b>	<b>0</b>	<b>140</b>	<b>662</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>143</b>	<b>143</b>	<b>0</b>	<b>95</b>	<b>149</b>	<b>155</b>	<b>399</b>	<b>84</b>	<b>948</b>	<b>58</b>	<b>153</b>	<b>1243</b>	<b>2447</b>
07:00 AM	0	189	0	32	221	0	0	0	25	25	0	46	57	32	135	40	329	16	44	429	810
07:15 AM	0	151	0	23	174	0	0	0	32	32	0	69	81	51	201	44	456	12	53	565	972
07:30 AM	0	213	0	46	259	0	0	0	49	49	0	57	97	50	204	55	495	25	39	614	1126
07:45 AM	0	170	0	47	217	0	0	0	41	41	0	40	71	45	156	30	394	13	48	485	899
<b>Total</b>	<b>0</b>	<b>723</b>	<b>0</b>	<b>148</b>	<b>871</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>147</b>	<b>147</b>	<b>0</b>	<b>212</b>	<b>306</b>	<b>178</b>	<b>696</b>	<b>169</b>	<b>1674</b>	<b>66</b>	<b>184</b>	<b>2093</b>	<b>3807</b>
08:00 AM	0	268	0	23	291	0	0	0	19	19	0	42	56	20	118	36	338	17	17	408	836
08:15 AM	0	180	0	18	198	0	0	0	15	15	0	46	61	18	125	53	264	29	22	368	706
08:30 AM	0	202	0	10	212	0	0	0	18	18	0	43	60	13	116	51	327	27	20	425	771
08:45 AM	0	155	0	14	169	0	0	0	12	12	0	63	54	14	131	45	327	25	12	409	721
<b>Total</b>	<b>0</b>	<b>805</b>	<b>0</b>	<b>65</b>	<b>870</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>64</b>	<b>64</b>	<b>0</b>	<b>194</b>	<b>231</b>	<b>65</b>	<b>490</b>	<b>185</b>	<b>1256</b>	<b>98</b>	<b>71</b>	<b>1610</b>	<b>3034</b>
<b>Grand Total</b>	<b>0</b>	<b>2050</b>	<b>0</b>	<b>353</b>	<b>2403</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>354</b>	<b>354</b>	<b>0</b>	<b>501</b>	<b>686</b>	<b>398</b>	<b>1585</b>	<b>438</b>	<b>3878</b>	<b>222</b>	<b>408</b>	<b>4946</b>	<b>9288</b>
Approch %	0	85.3	0	14.7		0	0	0	100		0	31.6	43.3	25.1		8.9	78.4	4.5	8.2		
Total %	0	22.1	0	3.8	25.9	0	0	0	3.8	3.8	0	5.4	7.4	4.3	17.1	4.7	41.8	2.4	4.4	53.3	

Start Time	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	07:15 AM	0	151	0	0	151	0	0	0	0	0	0	69	81	81	150	44	456	12	512
07:30 AM	0	213	0	0	213	0	0	0	0	0	0	57	97	97	154	55	495	25	575	942
07:45 AM	0	170	0	0	170	0	0	0	0	0	0	40	71	71	111	30	394	13	437	718
08:00 AM	0	268	0	0	268	0	0	0	0	0	0	42	56	56	98	36	338	17	391	757
Total Volume	0	802	0	0	802	0	0	0	0	0	0	208	305	305	513	165	1683	67	1915	3230
% App. Total	0	100	0	0		0	0	0	0	0	0	40.5	59.5		8.6	87.9	3.5			
PHF	.000	.748	.000	.000	.748	.000	.000	.000	.000	.000	.000	.754	.786		.833	.750	.850	.670	.833	.857

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GL, CY  
Counter: TU-0651, TU-0652  
Weather: Clear

File Name : WarKin PM  
Site Code : 00000002  
Start Date : 10/16/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
	App. Total				App. Total				App. Total				App. Total				
03:00 PM	0	154	0	19	0	0	0	28	0	85	67	25	69	415	31	18	533
03:15 PM	0	156	0	19	0	0	0	24	0	115	90	35	44	448	29	13	534
03:30 PM	0	207	0	30	0	0	0	30	0	100	87	52	70	486	19	17	592
03:45 PM	0	199	0	13	0	0	0	27	0	99	101	51	55	477	10	2	544
Total	0	716	0	81	0	0	0	109	0	399	345	163	238	1826	89	50	2203
04:00 PM	0	203	0	21	0	0	0	47	0	103	90	79	57	481	7	22	567
04:15 PM	0	201	0	14	0	0	0	33	0	115	95	63	54	544	2	17	617
04:30 PM	0	243	0	56	0	0	0	83	0	96	83	105	60	658	10	47	775
04:45 PM	0	270	0	36	0	0	0	48	0	79	74	68	64	615	10	31	720
Total	0	917	0	127	0	0	0	211	0	393	342	315	235	2298	29	117	2679
05:00 PM	0	213	0	23	0	0	0	50	0	70	86	81	68	622	21	28	739
05:15 PM	0	224	0	32	0	0	0	49	0	87	97	35	65	596	9	15	685
05:30 PM	0	199	0	23	0	0	0	31	0	77	91	51	65	595	8	20	688
05:45 PM	0	241	0	13	0	0	0	28	0	106	100	61	53	663	9	17	742
Total	0	877	0	91	0	0	0	158	0	340	374	228	251	2476	47	80	2854
Grand Total	0	2510	0	299	0	0	0	478	0	1132	1061	706	724	6600	165	247	7736
Approach %	0	89.4	0	10.6	0	0	0	100	0	39	36.6	24.4	9.4	85.3	2.1	3.2	
Total %	0	18	0	2.1	0	0	0	3.4	0	8.1	7.6	5.1	5.2	47.4	1.2	1.8	55.6

Start Time	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
	App. Total				App. Total				App. Total				App. Total			
04:30 PM	0	243	0	0	0	0	0	0	0	96	83	0	60	658	10	728
04:45 PM	0	270	0	0	0	0	0	0	0	79	74	0	64	615	10	689
05:00 PM	0	213	0	0	0	0	0	0	0	70	86	0	68	622	21	711
05:15 PM	0	224	0	0	0	0	0	0	0	87	97	0	65	596	9	670
Total Volume	0	950	0	0	0	0	0	0	0	332	340	0	257	2491	50	2798
% App. Total	0	100	0	0	0	0	0	0	0	49.4	50.6	0	9.2	89	1.8	
PHF	.000	.880	.000	.000	.000	.000	.000	.000	.000	.865	.876	.000	.945	.946	.595	.961

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: MM, KG  
Counter: D4-5673, D4-5677  
Weather: Clear

File Name : AtkKah AM  
Site Code : 00000001  
Start Date : 10/17/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Atkinson Drive Southbound			Kahakai Drive Westbound			Atkinson Drive Northbound			Eastbound					
	Left	Thru	Right	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
06:00 AM	1	108	0	6	0	2	4	12	0	23	3	0	26	0	147
06:15 AM	3	122	0	6	0	2	10	18	0	34	3	0	37	0	180
06:30 AM	6	168	0	10	0	9	8	27	0	51	1	0	52	0	253
06:45 AM	8	179	0	7	0	7	7	21	0	66	5	0	71	0	279
Total	18	577	0	29	0	20	29	78	0	174	12	0	186	0	859
07:00 AM	10	216	0	13	0	10	12	35	0	66	5	0	71	0	332
07:15 AM	11	256	0	15	0	11	17	43	0	73	5	0	78	0	388
07:30 AM	10	296	0	10	0	9	26	45	0	70	11	0	81	0	432
07:45 AM	32	299	0	14	0	22	15	51	0	56	8	0	64	0	446
Total	63	1067	0	52	0	52	70	174	0	265	29	0	294	0	1598
08:00 AM	20	279	0	14	0	14	12	40	0	74	6	0	80	0	419
08:15 AM	13	316	0	11	0	12	25	48	0	85	7	0	92	0	469
08:30 AM	12	300	0	9	0	7	17	33	0	81	6	0	87	0	432
08:45 AM	5	229	0	13	0	12	24	49	0	85	5	0	90	0	373
Total	50	1124	0	47	0	45	78	170	0	325	24	0	349	0	1693
Grand Total	131	2768	0	128	0	117	177	422	0	764	65	0	829	0	4150
Approch %	4.5	95.5	0	30.3	0	27.7	41.9	10.2	0	92.2	7.8	0	20	0	
Total %	3.2	66.7	0	3.1	0	2.8	4.3	10.2	0	18.4	1.6	0	20	0	

Start Time	Atkinson Drive Southbound			Kahakai Drive Westbound			Atkinson Drive Northbound			Eastbound					
	Left	Thru	Right	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
07:45 AM	32	299	0	14	0	22	22	36	0	56	8	0	64	0	431
08:00 AM	20	279	0	14	0	14	14	28	0	74	6	0	80	0	407
08:15 AM	13	316	0	11	0	12	12	23	0	85	7	0	92	0	444
08:30 AM	12	300	0	9	0	7	7	16	0	81	6	0	87	0	415
Total Volume	77	1194	0	48	0	55	55	103	0	296	27	0	323	0	1697
% App. Total	6.1	93.9	0	46.6	0	53.4	8.4	24.3	0	91.6	8.4	0	20	0	
PHF	.602	.945	.000	.857	.000	.625	.844	.715	.000	.871	.844	.000	.878	.000	.956

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:45 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: KG  
Counter: D4-5673  
Weather: Clear

File Name : AtkKah PM  
Site Code : 00000001  
Start Date : 10/17/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Atkinson Drive Southbound				Kahakai Drive Westbound				Northbound App. Total		Eastbound App. Total		Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	App. Total	
03:00 PM	9	108	0	0	117	36	0	17	0	53	0	0	170
03:15 PM	3	74	0	0	77	20	0	10	0	30	0	0	107
03:30 PM	4	80	0	0	84	15	0	14	0	29	0	0	113
03:45 PM	6	80	0	0	86	29	0	14	1	44	0	0	130
<b>Total</b>	<b>22</b>	<b>342</b>	<b>0</b>	<b>0</b>	<b>364</b>	<b>100</b>	<b>0</b>	<b>55</b>	<b>1</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>520</b>
04:00 PM	4	74	0	0	78	27	0	27	0	54	0	0	132
04:15 PM	7	97	0	0	104	53	0	30	0	83	0	0	187
04:30 PM	0	125	0	0	125	73	0	40	0	113	0	0	238
04:45 PM	6	67	0	0	73	11	0	8	0	19	0	0	92
<b>Total</b>	<b>17</b>	<b>363</b>	<b>0</b>	<b>0</b>	<b>380</b>	<b>164</b>	<b>0</b>	<b>105</b>	<b>0</b>	<b>269</b>	<b>0</b>	<b>0</b>	<b>649</b>
05:00 PM	13	74	0	0	87	20	0	11	0	31	0	0	118
05:15 PM	10	71	0	0	81	14	0	4	0	18	0	0	99
05:30 PM	4	69	0	0	73	12	0	7	0	19	0	0	92
05:45 PM	1	59	0	0	60	22	0	9	0	31	0	0	91
<b>Total</b>	<b>28</b>	<b>273</b>	<b>0</b>	<b>0</b>	<b>301</b>	<b>68</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>99</b>	<b>0</b>	<b>0</b>	<b>400</b>
<b>Grand Total</b>	<b>67</b>	<b>978</b>	<b>0</b>	<b>0</b>	<b>1045</b>	<b>332</b>	<b>0</b>	<b>191</b>	<b>1</b>	<b>524</b>	<b>0</b>	<b>0</b>	<b>1569</b>
Apprch %	6.4	93.6	0	0	63.4	63.4	0	36.5	0.2	33.4	0	0	0
Total %	4.3	62.3	0	0	66.6	21.2	0	12.2	0.1	33.4	0	0	0

Start Time	Atkinson Drive Southbound				Kahakai Drive Westbound				Northbound App. Total		Eastbound App. Total		Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:45 PM													
03:45 PM	6	80	0	0	86	29	0	14	0	43	0	0	129
04:00 PM	4	74	0	0	78	27	0	27	0	54	0	0	132
04:15 PM	7	97	0	0	104	53	0	30	0	83	0	0	187
04:30 PM	0	125	0	0	125	73	0	40	0	113	0	0	238
<b>Total Volume</b>	<b>17</b>	<b>376</b>	<b>0</b>	<b>0</b>	<b>393</b>	<b>182</b>	<b>0</b>	<b>111</b>	<b>0</b>	<b>293</b>	<b>0</b>	<b>0</b>	<b>686</b>
% App. Total	4.3	95.7	0	0	62.1	62.1	0	37.9	0	64.8	0	0	721
PHF	.607	.752	.000	.000	.786	.623	.000	.694	.000	.648	.000	.000	.721

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: PA, BE  
Counter: T-1841, T-1839  
Weather: Clear

File Name : AtkKon AM  
Site Code : 00000002  
Start Date : 10/17/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Atkinson Drive Southbound				Westbound				Atkinson Drive Northbound				Kona Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	108	9	0	117	0	26	0	0	37	0	0	10	7	17	0	0	0	0	0	171
06:15 AM	0	110	16	0	126	0	36	0	0	49	0	0	14	19	33	0	0	0	0	0	208
06:30 AM	0	143	22	0	165	0	53	0	0	69	0	0	8	13	21	0	0	0	0	0	255
06:45 AM	0	157	27	0	184	0	72	0	0	95	0	0	8	7	15	0	0	0	0	0	294
<b>Total</b>	<b>0</b>	<b>518</b>	<b>74</b>	<b>0</b>	<b>592</b>	<b>0</b>	<b>187</b>	<b>0</b>	<b>0</b>	<b>250</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>46</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>928</b>
07:00 AM	0	189	31	0	220	0	71	0	0	96	0	0	9	11	20	0	0	0	0	0	336
07:15 AM	0	226	25	0	251	0	78	0	0	100	0	0	24	19	43	0	0	0	0	0	394
07:30 AM	0	272	31	0	303	0	81	0	0	121	0	0	24	26	50	0	0	0	0	0	474
07:45 AM	0	259	43	0	302	0	64	0	0	87	0	0	9	42	51	0	0	0	0	0	440
<b>Total</b>	<b>0</b>	<b>946</b>	<b>130</b>	<b>0</b>	<b>1076</b>	<b>0</b>	<b>294</b>	<b>0</b>	<b>0</b>	<b>404</b>	<b>0</b>	<b>0</b>	<b>66</b>	<b>98</b>	<b>164</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1644</b>
08:00 AM	0	245	38	0	283	0	80	0	0	97	0	0	17	33	50	0	0	0	0	0	430
08:15 AM	0	276	46	0	322	0	92	0	0	131	0	0	16	39	55	0	0	0	0	0	508
08:30 AM	0	263	34	0	297	0	87	0	0	118	0	0	27	19	46	0	0	0	0	0	461
08:45 AM	0	196	30	0	226	0	89	0	0	113	0	0	10	11	21	0	0	0	0	0	360
<b>Total</b>	<b>0</b>	<b>980</b>	<b>148</b>	<b>0</b>	<b>1128</b>	<b>0</b>	<b>348</b>	<b>0</b>	<b>0</b>	<b>459</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>102</b>	<b>172</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1759</b>
<b>Grand Total</b>	<b>0</b>	<b>2444</b>	<b>352</b>	<b>0</b>	<b>2796</b>	<b>0</b>	<b>829</b>	<b>0</b>	<b>0</b>	<b>1113</b>	<b>0</b>	<b>0</b>	<b>176</b>	<b>246</b>	<b>422</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4331</b>
<b>Approch % Total %</b>	<b>0</b>	<b>87.4</b>	<b>12.6</b>	<b>0</b>	<b>64.6</b>	<b>0</b>	<b>74.5</b>	<b>0</b>	<b>0</b>	<b>25.7</b>	<b>0</b>	<b>0</b>	<b>41.7</b>	<b>58.3</b>	<b>9.7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9.7</b>
	<b>0</b>	<b>56.4</b>	<b>8.1</b>	<b>0</b>		<b>6.6</b>	<b>19.1</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>4.1</b>	<b>5.7</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Start Time	Atkinson Drive Southbound				Westbound				Atkinson Drive Northbound				Kona Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:30 AM	0	272	31	0	303	0	81	0	0	121	0	0	24	24	24	0	0	0	0	0	448
07:45 AM	0	259	43	0	302	0	64	0	0	87	0	0	9	9	9	0	0	0	0	0	398
08:00 AM	0	245	38	0	283	0	80	0	0	97	0	0	17	17	17	0	0	0	0	0	397
08:15 AM	0	276	46	0	322	0	92	0	0	131	0	0	16	16	16	0	0	0	0	0	469
<b>Total Volume</b>	<b>0</b>	<b>1052</b>	<b>158</b>	<b>0</b>	<b>1210</b>	<b>0</b>	<b>317</b>	<b>0</b>	<b>0</b>	<b>436</b>	<b>0</b>	<b>0</b>	<b>66</b>	<b>66</b>	<b>66</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1712</b>
<b>% App. Total</b>	<b>0</b>	<b>86.9</b>	<b>13.1</b>	<b>0</b>	<b>93.9</b>	<b>0</b>	<b>72.7</b>	<b>0</b>	<b>0</b>	<b>32.7</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>.913</b>
<b>PHF</b>	<b>.000</b>	<b>.953</b>	<b>.859</b>	<b>0</b>	<b>.939</b>	<b>.000</b>	<b>.861</b>	<b>.000</b>	<b>.000</b>	<b>.832</b>	<b>.000</b>	<b>.000</b>	<b>.688</b>	<b>.688</b>	<b>.688</b>	<b>.000</b>	<b>.000</b>	<b>.688</b>	<b>.000</b>	<b>.688</b>	<b>.913</b>

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:30 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: PA, NT  
Counter: T-1841, T-1839  
Weather: Clear

File Name : AtkKon PM  
Site Code : 00000002  
Start Date : 10/17/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Atkinson Drive Southbound					Westbound					Atkinson Drive Northbound					Kona Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	86	24	0	110	0	31	164	0	0	195	0	0	25	26	51	0	0	26	51	356
03:15 PM	0	60	10	0	70	0	28	166	0	0	194	0	0	29	22	51	0	0	22	51	315
03:30 PM	0	76	7	0	83	0	33	169	0	0	202	0	0	27	31	58	0	0	31	58	343
03:45 PM	0	66	14	0	80	0	40	157	0	0	197	1	0	31	49	81	1	0	49	81	358
<b>Total</b>	<b>0</b>	<b>288</b>	<b>55</b>	<b>0</b>	<b>343</b>	<b>0</b>	<b>132</b>	<b>656</b>	<b>0</b>	<b>0</b>	<b>788</b>	<b>1</b>	<b>0</b>	<b>112</b>	<b>128</b>	<b>241</b>	<b>1</b>	<b>0</b>	<b>128</b>	<b>241</b>	<b>1372</b>
04:00 PM	0	56	20	0	76	0	32	167	0	0	199	0	0	29	23	52	0	0	23	52	327
04:15 PM	0	73	24	0	97	0	39	173	0	0	212	1	0	28	61	90	1	0	61	90	399
04:30 PM	0	101	24	0	125	0	42	181	0	0	223	1	0	36	51	88	1	0	51	88	436
04:45 PM	0	63	6	0	69	0	44	179	0	0	223	0	0	30	22	52	0	0	22	52	344
<b>Total</b>	<b>0</b>	<b>293</b>	<b>74</b>	<b>0</b>	<b>367</b>	<b>0</b>	<b>157</b>	<b>700</b>	<b>0</b>	<b>0</b>	<b>857</b>	<b>2</b>	<b>0</b>	<b>123</b>	<b>157</b>	<b>282</b>	<b>2</b>	<b>0</b>	<b>157</b>	<b>282</b>	<b>1506</b>
05:00 PM	0	57	15	0	72	0	32	202	0	0	234	2	0	35	20	57	2	0	20	57	363
05:15 PM	0	61	12	0	73	0	49	164	0	0	213	1	0	44	25	70	1	0	25	70	356
05:30 PM	0	56	11	0	67	0	39	180	0	0	219	0	0	27	24	51	0	0	24	51	337
05:45 PM	0	52	7	0	59	0	41	184	0	0	225	0	0	20	25	45	0	0	25	45	329
<b>Total</b>	<b>0</b>	<b>226</b>	<b>45</b>	<b>0</b>	<b>271</b>	<b>0</b>	<b>161</b>	<b>730</b>	<b>0</b>	<b>0</b>	<b>891</b>	<b>3</b>	<b>0</b>	<b>126</b>	<b>94</b>	<b>223</b>	<b>3</b>	<b>0</b>	<b>94</b>	<b>223</b>	<b>1385</b>
<b>Grand Total</b>	<b>0</b>	<b>807</b>	<b>174</b>	<b>0</b>	<b>981</b>	<b>0</b>	<b>450</b>	<b>2086</b>	<b>0</b>	<b>0</b>	<b>2536</b>	<b>6</b>	<b>0</b>	<b>361</b>	<b>379</b>	<b>746</b>	<b>6</b>	<b>0</b>	<b>379</b>	<b>746</b>	<b>4263</b>
<b>Approch %</b>	<b>0</b>	<b>82.3</b>	<b>17.7</b>	<b>0</b>	<b>82.3</b>	<b>0</b>	<b>17.7</b>	<b>82.3</b>	<b>0</b>	<b>0</b>	<b>82.3</b>	<b>0.8</b>	<b>0</b>	<b>48.4</b>	<b>50.8</b>	<b>17.5</b>	<b>0.1</b>	<b>0</b>	<b>50.8</b>	<b>17.5</b>	<b>17.5</b>
<b>Total %</b>	<b>0</b>	<b>18.9</b>	<b>4.1</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>10.6</b>	<b>48.9</b>	<b>0</b>	<b>0</b>	<b>59.5</b>	<b>0.1</b>	<b>0</b>	<b>8.5</b>	<b>8.9</b>	<b>17.5</b>	<b>0.1</b>	<b>0</b>	<b>8.9</b>	<b>17.5</b>	<b>17.5</b>

Start Time	Atkinson Drive Southbound					Westbound					Atkinson Drive Northbound					Kona Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:15 PM	0	73	24	0	97	0	39	173	0	0	212	1	0	28	28	29	1	0	28	29	338
04:30 PM	0	101	6	0	125	0	42	181	0	0	223	1	0	36	36	37	1	0	36	37	385
04:45 PM	0	63	15	0	78	0	44	179	0	0	223	0	0	30	30	30	0	0	30	30	322
05:00 PM	0	57	15	0	72	0	32	202	0	0	234	2	0	35	35	37	2	0	35	37	343
<b>Total Volume</b>	<b>0</b>	<b>294</b>	<b>69</b>	<b>0</b>	<b>363</b>	<b>0</b>	<b>157</b>	<b>735</b>	<b>0</b>	<b>0</b>	<b>892</b>	<b>4</b>	<b>0</b>	<b>129</b>	<b>133</b>	<b>133</b>	<b>4</b>	<b>0</b>	<b>129</b>	<b>133</b>	<b>1388</b>
<b>% App. Total</b>	<b>0</b>	<b>81</b>	<b>19</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>17.6</b>	<b>82.4</b>	<b>0</b>	<b>0</b>	<b>17.6</b>	<b>3</b>	<b>0</b>	<b>97</b>	<b>896</b>	<b>899</b>	<b>0.500</b>	<b>0</b>	<b>896</b>	<b>899</b>	<b>.901</b>
<b>PHF</b>	<b>.000</b>	<b>.728</b>	<b>.719</b>	<b>0</b>	<b>.726</b>	<b>.000</b>	<b>.892</b>	<b>.910</b>	<b>.000</b>	<b>.000</b>	<b>.953</b>	<b>.500</b>	<b>.000</b>	<b>.896</b>	<b>.899</b>	<b>.899</b>	<b>.000</b>	<b>.000</b>	<b>.896</b>	<b>.899</b>	<b>.901</b>

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: TC, PA  
Counter: TU-0651, TU-0654  
Weather: Clear

File Name : AtkMah AM  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

Start Time	Groups Printed- Unshifted															
	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound					Atkinson Drive (Numbers In left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	67	4	0	71	10	23	0	5	38	3	0	33	9	45	154
06:15 AM	0	93	9	0	102	14	36	0	16	66	5	0	24	13	42	210
06:30 AM	0	127	12	0	139	20	50	0	16	86	4	0	29	11	44	269
06:45 AM	0	169	22	0	191	28	65	0	13	106	4	0	42	8	54	351
Total	0	456	47	0	503	72	174	0	50	296	16	0	128	41	185	984
07:00 AM	0	153	21	0	174	26	74	0	21	121	6	0	42	22	70	365
07:15 AM	0	177	16	0	193	21	66	0	21	108	4	0	34	14	52	353
07:30 AM	0	194	29	0	223	23	74	0	18	115	7	0	33	13	53	391
07:45 AM	0	177	23	0	200	15	59	0	25	99	14	0	43	28	85	384
Total	0	701	89	0	790	85	273	0	85	443	31	0	152	77	260	1493
08:00 AM	0	204	29	0	233	37	73	0	36	146	13	0	45	18	76	455
08:15 AM	0	182	46	0	228	26	89	0	18	133	10	0	32	24	66	427
08:30 AM	0	156	35	0	191	31	68	8	16	123	21	0	25	27	73	387
08:45 AM	0	149	58	0	207	22	69	0	31	122	20	1	42	17	80	409
Total	0	691	168	0	859	116	299	8	101	524	64	1	144	86	295	1678
Grand Total	0	1848	304	0	2152	273	746	8	236	1263	111	1	424	204	740	4155
Approch %	0	85.9	14.1	0		21.6	59.1	0.6	18.7		15	0.1	57.3	27.6		
Total %	0	44.5	7.3	0	51.8	6.6	18	0.2	5.7	30.4	2.7	0	10.2	4.9	17.8	

Start Time	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound										Atkinson Drive (Numbers In left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total				
	08:00 AM	0	204	29	0	233	37	73	0	36	146	13	0	45	18	76	455			
08:15 AM	0	182	46	0	228	26	89	0	18	133	10	0	32	24	66	427				
08:30 AM	0	156	35	0	191	31	68	8	16	123	21	0	25	27	73	387				
08:45 AM	0	149	58	0	207	22	69	0	31	122	20	1	42	17	80	409				
Total	0	691	168	0	859	116	299	8	101	524	64	1	144	86	295	1678				
Grand Total	0	1848	304	0	2152	273	746	8	236	1263	111	1	424	204	740	4155				
Approch %	0	85.9	14.1	0		21.6	59.1	0.6	18.7		15	0.1	57.3	27.6						
Total %	0	44.5	7.3	0	51.8	6.6	18	0.2	5.7	30.4	2.7	0	10.2	4.9	17.8					

Start Time	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound										Atkinson Drive (Numbers In left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total				
	08:00 AM	0	204	29	0	233	37	73	0	36	146	13	0	45	18	76	455			
08:15 AM	0	182	46	0	228	26	89	0	18	133	10	0	32	24	66	427				
08:30 AM	0	156	35	0	191	31	68	8	16	123	21	0	25	27	73	387				
08:45 AM	0	149	58	0	207	22	69	0	31	122	20	1	42	17	80	409				
Total	0	691	168	0	859	116	299	8	101	524	64	1	144	86	295	1678				
Grand Total	0	1848	304	0	2152	273	746	8	236	1263	111	1	424	204	740	4155				
Approch %	0	85.9	14.1	0		21.6	59.1	0.6	18.7		15	0.1	57.3	27.6						
Total %	0	44.5	7.3	0	51.8	6.6	18	0.2	5.7	30.4	2.7	0	10.2	4.9	17.8					



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: TC, PA  
Counter: TU-0651, TU-0654  
Weather: Clear

File Name : AtkMah AM-1  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

Start Time	Groups Printed- Unshifted												Int. Total				
	Atkinson Drive In Right Column Indicates Right Turn Up Ramp)				Atkinson Drive Northbound				Atkinson Drive Indicates Left Turn Up Ramp )					Eastbound			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru		Right	Peds	App. Total	App. Total
06:00 AM	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	6
06:15 AM	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	6
06:30 AM	0	0	6	0	6	5	0	0	0	5	0	0	0	0	5	0	11
06:45 AM	0	0	4	0	4	3	0	0	0	3	0	0	0	0	3	0	7
Total	0	0	22	0	22	8	0	0	0	8	0	0	0	0	8	0	30
07:00 AM	0	0	8	0	8	7	0	0	0	7	0	0	0	0	7	0	15
07:15 AM	0	0	5	0	5	2	0	0	0	2	0	0	0	0	2	0	7
07:30 AM	0	0	17	0	17	4	0	0	0	4	0	0	0	0	4	0	21
07:45 AM	0	0	18	0	18	11	0	0	0	11	0	0	0	0	11	0	29
Total	0	0	48	0	48	24	0	0	0	24	0	0	0	0	24	0	72
08:00 AM	0	0	8	0	8	6	0	0	0	6	0	0	0	0	6	0	14
08:15 AM	0	0	9	0	9	10	0	0	0	10	0	0	0	0	10	0	19
08:30 AM	0	0	12	0	12	9	0	0	0	9	0	0	0	0	9	0	21
08:45 AM	0	0	14	0	14	10	0	0	0	10	0	0	0	0	10	0	24
Total	0	0	43	0	43	35	0	0	0	35	0	0	0	0	35	0	78
Grand Total	0	0	113	0	113	67	0	0	0	67	0	0	0	0	67	0	180
Approch %	0	0	100	0	62.8	100	0	0	0	37.2	0	0	0	0	37.2	0	
Total %	0	0	62.8	0	62.8	37.2	0	0	0	37.2	0	0	0	0	37.2	0	

Start Time	Atkinson Drive Indicates Right Turn Up Ramp)												Int. Total				
	Atkinson Drive In Right Column Indicates Right Turn Up Ramp)				Atkinson Drive Northbound				Atkinson Drive Indicates Left Turn Up Ramp )					Eastbound			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru		Right	Peds	App. Total	App. Total
07:30 AM	0	0	17	0	17	4	0	0	0	4	0	0	0	0	4	0	21
07:45 AM	0	0	18	0	18	6	0	0	0	6	0	0	0	0	6	0	29
08:00 AM	0	0	8	0	8	10	0	0	0	10	0	0	0	0	10	0	14
08:15 AM	0	0	9	0	9	10	0	0	0	10	0	0	0	0	10	0	19
Total Volume	0	0	52	0	52	31	0	0	0	31	0	0	0	0	31	0	83
% App. Total	0	0	100	0	72.2	100	0	0	0	70.5	0	0	0	0	70.5	0	
PHF	.000	.000	.722	.722	.722	.000	.000	.000	.000	.705	.000	.000	.000	.000	.705	.000	.716

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: TC, PA  
Counter: TU-0651, TU-0654  
Weather: Clear

File Name : AtkMah PM  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

Start Time	Groups Printed- Unshifted															
	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound					Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	92	35	0	127	33	95	0	24	152	73	0	86	17	176	455
03:15 PM	0	54	6	0	60	30	97	0	32	159	78	0	87	21	186	405
03:30 PM	0	50	12	0	62	33	127	0	30	190	69	0	103	21	193	445
03:45 PM	0	43	5	0	48	45	110	0	29	184	70	0	69	34	173	405
Total	0	239	58	0	297	141	429	0	115	685	290	0	345	93	728	1710
04:00 PM	0	69	8	0	77	35	92	0	45	172	83	0	82	25	190	439
04:15 PM	0	45	11	0	56	37	128	0	38	203	101	0	81	15	197	456
04:30 PM	0	64	5	0	69	23	116	0	40	179	90	0	81	33	204	452
04:45 PM	0	75	12	0	87	34	122	0	51	207	55	0	85	32	172	466
Total	0	253	36	0	289	129	458	0	174	761	329	0	329	105	763	1813
05:00 PM	0	64	12	0	76	29	123	0	34	186	76	0	91	29	196	458
05:15 PM	0	62	8	0	70	33	107	0	34	174	97	1	77	29	204	448
05:30 PM	0	47	10	0	57	20	122	0	41	183	80	0	87	25	192	432
05:45 PM	0	56	11	0	67	19	121	0	32	172	77	0	92	19	188	427
Total	0	229	41	0	270	101	473	0	141	715	330	1	347	102	780	1765
Grand Total	0	721	135	0	856	371	1360	0	430	2161	949	1	1021	300	2271	5288
Approach %	0	84.2	15.8	0	16.2	17.2	62.9	0	19.9	41.8	41.8	0	45	13.2	42.9	
Total %	0	13.6	2.6	0	16.2	7	25.7	0	8.1	17.9	17.9	0	19.3	5.7	42.9	

Start Time	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound										Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total				
	04:15 PM	0	45	11	0	56	37	128	0	34	186	76	0	91	29	196	458			
04:30 PM	0	64	5	0	69	23	116	0	40	179	90	0	81	33	204	452				
04:45 PM	0	75	12	0	87	34	122	0	51	207	55	0	85	32	172	466				
Total	0	239	58	0	297	141	429	0	115	685	290	0	345	93	728	1710				

Start Time	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound										Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total				
	04:15 PM	0	45	11	0	56	37	128	0	34	186	76	0	91	29	196	458			
04:30 PM	0	64	5	0	69	23	116	0	40	179	90	0	81	33	204	452				
04:45 PM	0	75	12	0	87	34	122	0	51	207	55	0	85	32	172	466				
Total	0	239	58	0	297	141	429	0	115	685	290	0	345	93	728	1710				

Start Time	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound										Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total				
	04:15 PM	0	45	11	0	56	37	128	0	34	186	76	0	91	29	196	458			
04:30 PM	0	64	5	0	69	23	116	0	40	179	90	0	81	33	204	452				
04:45 PM	0	75	12	0	87	34	122	0	51	207	55	0	85	32	172	466				
Total	0	239	58	0	297	141	429	0	115	685	290	0	345	93	728	1710				



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, RJ  
Counter: TU-0650, D4-5675  
Weather: Clear

File Name : AtkAla AM  
Site Code : 0000001  
Start Date : 8/30/2012  
Page No : 1

## Groups Printed- Unshifted

Start Time	Atkinson Drive Southbound					Ala Moana Boulevard Westbound					Ala Moana Park Drive Northbound					Ala Moana Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	24	26	47	8	105	9	128	8	0	145	7	6	5	2	20	15	94	12	17	138	408
06:15 AM	14	32	35	20	101	8	154	8	0	170	9	10	9	8	36	22	154	15	26	217	524
06:30 AM	23	29	98	21	171	11	202	19	0	232	14	13	6	11	44	40	141	19	29	229	676
06:45 AM	33	19	142	25	219	7	226	19	0	252	12	20	10	1	43	69	232	14	24	339	853
Total	94	106	322	74	596	35	710	54	0	799	42	49	30	22	143	146	621	60	96	923	2461
07:00 AM	29	37	124	16	206	6	282	27	0	315	14	18	15	9	56	50	191	11	33	285	862
07:15 AM	25	26	146	26	223	8	296	33	0	337	18	13	9	26	66	60	219	5	52	336	962
07:30 AM	57	14	153	15	239	9	318	30	0	357	24	12	12	9	57	43	248	9	24	324	977
07:45 AM	34	36	132	21	223	10	306	31	0	347	15	20	10	9	54	51	204	10	31	296	920
Total	145	113	555	78	891	33	1202	121	0	1356	71	63	46	53	233	204	862	35	140	1241	3721
08:00 AM	34	32	131	33	230	22	254	39	0	315	19	20	5	14	58	58	223	12	47	340	943
08:15 AM	26	42	109	25	202	6	288	45	0	339	16	23	11	11	61	59	203	8	28	298	900
08:30 AM	29	24	92	28	173	20	230	33	0	283	20	21	14	9	64	62	257	9	31	359	879
08:45 AM	30	33	95	29	187	12	310	37	0	359	13	14	9	15	51	44	224	19	37	324	921
Total	119	131	427	115	792	60	1082	154	0	1296	68	78	39	49	234	223	907	48	143	1321	3643
Grand Total	358	350	1304	267	2279	128	2994	329	0	3451	181	190	115	124	610	573	2390	143	379	3485	9825
Approch %	15.7	15.4	57.2	11.7	23.2	3.7	86.8	9.5	0	35.1	29.7	31.1	18.9	20.3	6.2	16.4	68.6	4.1	10.9	35.5	
Total %	3.6	3.6	13.3	2.7	23.2	1.3	30.5	3.3	0	35.1	1.8	1.9	1.2	1.3	6.2	5.8	24.3	1.5	3.9	35.5	

Start Time	Atkinson Drive Southbound					Ala Moana Boulevard Westbound					Ala Moana Park Drive Northbound					Ala Moana Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:15 AM	25	26	146		197	8	296	33		337	18	13	9		40	60	219	5		284	858
07:30 AM	57	14	153		224	9	318	30		357	24	12	12		48	43	248	9		300	929
07:45 AM	34	36	132		202	10	306	31		347	15	20	10		45	51	204	10		265	859
08:00 AM	34	32	131		197	22	254	39		315	19	20	5		44	58	223	12		293	849
Total Volume	150	108	562		820	49	1174	133		1356	76	65	36		177	212	894	36		1142	3495
% App. Total	18.3	13.2	68.5		.915	.557	.923	.853		.950	.792	.813	.750		.922	.883	.901	.750		.952	.941
PHF	.658	.750	.918																		

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, RJ  
Counter: TU-0650, D4-5675  
Weather: Clear

File Name : AtkAla AM-1  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

Start Time	Atkinson Drive										Groups Printed- Unshifted							
	Indicates Pedestrian Count At X-Walk In Right Turn Lanes					(Numbers In Peds Column)					Southbound		Westbound		Northbound		Eastbound	
	Left	Thru	Right	Peds	App. Total	Right	Thru	Left	Peds	App. Total	App. Total	App. Total	App. Total	App. Total	App. Total	App. Total	App. Total	Int. Total
06:00 AM	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	10
06:15 AM	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	15
06:30 AM	0	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	30
06:45 AM	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	14
Total	0	0	0	69	69	0	0	0	0	0	0	0	0	0	0	0	0	69
07:00 AM	0	0	0	22	22	0	0	0	0	0	0	0	0	0	0	0	0	22
07:15 AM	0	0	0	24	24	0	0	0	0	0	0	0	0	0	0	0	0	24
07:30 AM	0	0	0	38	38	0	0	0	0	0	0	0	0	0	0	0	0	38
07:45 AM	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	15
Total	0	0	0	99	99	0	0	0	0	0	0	0	0	0	0	0	0	99
08:00 AM	0	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	30
08:15 AM	0	0	0	19	19	0	0	0	0	0	0	0	0	0	0	0	0	19
08:30 AM	0	0	0	37	37	0	0	0	0	0	0	0	0	0	0	0	0	37
08:45 AM	0	0	0	28	28	0	0	0	0	0	0	0	0	0	0	0	0	28
Total	0	0	0	114	114	0	0	0	0	0	0	0	0	0	0	0	0	114
Grand Total	0	0	0	282	282	0	0	0	0	0	0	0	0	0	0	0	0	282
Approch %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	100
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	100

Start Time	Atkinson Drive										(Numbers In)						
	Peds Column Indicates Pedestrian Count At X-Walk In Right Turn Lanes)					Southbound					Westbound		Northbound		Eastbound		
	Left	Thru	Right	Peds	App. Total	Right	Thru	Left	Peds	App. Total	App. Total	App. Total	App. Total	App. Total	App. Total	App. Total	Int. Total
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 06:00 AM



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, RJ  
Counter: TU-0650, D4-5675  
Weather: Clear

File Name : AtkAla PM  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

## Groups Printed - Unshifted

Start Time	Atkinson Drive Southbound				Ala Moana Boulevard Westbound				Ala Moana Park Drive Northbound				Ala Moana Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
03:00 PM	53	20	88	29	190	14	251	60	0	325	16	21	12	33	82	51	353	8	39	451	1048
03:15 PM	69	19	77	17	182	10	331	79	0	420	10	33	19	28	90	55	324	6	49	434	1126
03:30 PM	45	20	61	32	158	12	286	81	0	379	15	20	18	26	79	94	370	10	51	525	1141
03:45 PM	66	15	47	53	181	18	323	99	0	440	12	21	25	28	86	62	334	16	39	451	1158
Total	233	74	273	131	711	54	1191	319	0	1584	53	95	74	115	337	262	1381	40	178	1861	4473
04:00 PM	55	21	56	44	176	10	253	126	0	389	26	18	22	23	89	93	291	13	39	436	1090
04:15 PM	50	20	65	66	201	13	403	80	0	496	20	26	17	30	93	81	419	11	41	552	1342
04:30 PM	62	28	58	37	185	23	355	75	0	453	26	27	21	34	108	90	339	25	71	525	1271
04:45 PM	49	29	54	60	192	19	297	77	0	393	21	20	24	37	102	97	384	31	57	569	1256
Total	216	98	233	207	754	65	1308	358	0	1731	93	91	84	124	392	361	1433	80	208	2082	4959
05:00 PM	65	39	56	58	218	17	326	100	0	443	15	28	14	35	92	66	318	19	56	459	1212
05:15 PM	61	26	41	21	149	31	273	91	0	395	12	25	13	33	83	101	222	19	75	417	1044
05:30 PM	47	32	57	59	195	13	278	62	0	353	24	27	15	38	104	66	313	35	91	505	1157
05:45 PM	52	45	43	54	194	19	253	71	0	343	25	42	13	43	123	118	370	20	86	594	1254
Total	225	142	197	192	756	80	1130	324	0	1534	76	122	55	149	402	351	1223	93	308	1975	4667
Grand Total	674	314	703	530	2221	199	3629	1001	0	4829	222	308	213	388	1131	974	4037	213	694	5918	14099
Apprch %	30.3	14.1	31.7	23.9		4.1	75.2	20.7	0		19.6	27.2	18.8	34.3	8	16.5	68.2	3.6	11.7		
Total %	4.8	2.2	5	3.8	15.8	1.4	25.7	7.1	0	34.3	1.6	2.2	1.5	2.8		6.9	28.6	1.5	4.9		42

Start Time	Atkinson Drive Southbound				Ala Moana Boulevard Westbound				Ala Moana Park Drive Northbound				Ala Moana Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
04:15 PM	50	20	65	65	135	13	403	80	0	496	20	26	17	17	63	81	419	11	51	511	1205
04:30 PM	62	28	58	58	148	23	355	75	0	453	26	27	21	21	74	90	339	25	454	1129	
04:45 PM	49	29	54	54	132	19	297	77	0	393	21	20	24	24	65	97	384	31	512	1102	
05:00 PM	65	39	56	56	160	17	326	100	0	443	15	28	14	14	57	66	318	19	403	1063	
Total Volume	226	116	233	233	575	72	1381	332	0	1785	82	101	76	76	259	334	1460	86	1880	4499	
% App. Total	39.3	20.2	40.5	40.5		4	77.4	18.6			31.7	39	29.3	29.3	8	17.8	77.7	4.6			
PHF	.869	.744	.896	.896	.898	.783	.857	.830		.900	.788	.902	.792		.875	.861	.871	.694		.918	.933

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: GC, RJ  
Counter: TU-0650, D4-5675  
Weather: Clear

File Name : AtkAla PM-1  
Site Code : 00000001  
Start Date : 8/30/2012  
Page No : 1

## Groups Printed- Unshifted

Start Time	Atkinson Drive Column Indicates Pedestrian Count In X-Walk At Right Turn Lanes				Southbound				Westbound				Northbound				Eastbound						
	Left		Thru		Right		Peds		App. Total		App. Total		App. Total		App. Total		App. Total		App. Total		App. Total		
	03:00 PM	03:15 PM	03:30 PM	03:45 PM	0	0	0	41	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	221	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0	221
04:00 PM	0	0	0	0	0	0	88	0	88	0	0	0	0	0	0	0	0	0	0	0	0	0	88
04:15 PM	0	0	0	0	0	0	72	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	72
04:30 PM	0	0	0	0	0	0	65	0	65	0	0	0	0	0	0	0	0	0	0	0	0	0	65
04:45 PM	0	0	0	0	0	0	87	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0	87
Total	0	0	0	0	0	0	312	0	312	0	0	0	0	0	0	0	0	0	0	0	0	0	312
05:00 PM	0	0	0	0	0	0	83	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	83
05:15 PM	0	0	0	0	0	0	59	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	59
05:30 PM	0	0	0	0	0	0	142	0	142	0	0	0	0	0	0	0	0	0	0	0	0	0	142
05:45 PM	0	0	0	0	0	0	94	0	94	0	0	0	0	0	0	0	0	0	0	0	0	0	94
Total	0	0	0	0	0	0	378	0	378	0	0	0	0	0	0	0	0	0	0	0	0	0	378
Grand Total	0	0	0	0	0	0	911	0	911	0	0	0	0	0	0	0	0	0	0	0	0	0	911
Apprch %	0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	100
Total %	0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	100

Start Time	Atkinson Drive Peds Column Indicates Pedestrian Count In X-Walk At Right Turn Lanes				Southbound				Westbound				Northbound				Eastbound						
	Left		Thru		Right		Peds		App. Total		App. Total		App. Total		App. Total		App. Total		App. Total		App. Total		
	03:00 PM	03:15 PM	03:30 PM	03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:00 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: GC, CY  
Counter: D4-5676, D4-5674  
Weather: Clear

File Name : KamMid AM - 1  
Site Code : 00000004  
Start Date : 10/17/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Middle Street Left = Left Turn To Kamehameha Highway, Right = Right Turn To Nimitz Highway Southbound				Kamehameha Highway Westbound				H-1 Freeway Left = Left Turn To Middle Street, Thru = Thru To Kamehameha Highway Eastbound				Int. Total			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru		Right	Peds	App. Total
06:00 AM	48	0	22	0	70	0	80	29	0	109	0	44	252	0	296	475
06:15 AM	72	0	33	0	105	0	96	36	0	132	0	65	329	0	394	631
06:30 AM	115	0	31	0	146	0	118	39	0	157	0	78	374	0	452	755
06:45 AM	98	0	32	0	130	0	128	31	0	159	0	44	363	0	407	696
Total	333	0	118	0	451	0	422	135	0	557	0	231	1318	0	1549	2557
07:00 AM	103	0	33	0	136	0	118	30	0	148	0	73	330	0	403	687
07:15 AM	81	0	32	0	113	0	102	35	0	137	0	58	323	0	381	631
07:30 AM	78	0	19	0	97	0	100	31	0	131	0	81	347	0	428	656
07:45 AM	183	0	27	0	210	0	122	38	0	160	0	60	232	0	292	662
Total	445	0	111	0	556	0	442	134	0	576	0	272	1232	0	1504	2636
08:00 AM	99	0	26	0	125	0	89	55	0	144	0	86	233	0	319	588
08:15 AM	91	0	28	0	119	0	123	31	0	154	0	99	281	0	380	653
08:30 AM	104	0	23	0	127	0	150	41	0	191	0	109	236	0	345	663
08:45 AM	104	0	29	0	133	0	124	52	0	176	0	128	233	0	361	670
Total	398	0	106	0	504	0	486	179	0	665	0	422	983	0	1405	2574
Grand Total	1176	0	335	0	1511	0	1350	448	0	1798	0	925	3533	0	4458	7767
Approch %	77.8	0	22.2	0		0	75.1	24.9	0		0	20.7	79.3	0		
Total %	15.1	0	4.3	0	19.5	0	17.4	5.8	0	23.1	0	11.9	45.5	0	57.4	

Start Time	Middle Street Left = Left Turn To Kamehameha Highway, Right = Right Turn To Nimitz Highway Southbound				Kamehameha Highway Westbound				H-1 Freeway Left = Left Turn To Middle Street, Thru = Thru To Kamehameha Highway Eastbound				Int. Total			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru		Right	Peds	App. Total
06:15 AM	72	0	33	0	105	0	96	36	0	132	0	65	329	0	394	631
06:30 AM	115	0	31	0	146	0	118	39	0	157	0	78	374	0	462	755
06:45 AM	98	0	32	0	130	0	128	31	0	159	0	44	363	0	407	696
07:00 AM	103	0	33	0	136	0	118	30	0	148	0	73	330	0	403	687
Total Volume	388	0	129	0	517	0	460	136	0	596	0	260	1396	0	1656	2769
% App. Total	75	0	25	0		0	77.2	22.8	0		0	15.7	84.3	0		
PHF	.843	.000	.977	.885		.000	.898	.872	.000	.937	.000	.833	.933	.000	.916	.917

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 06:15 AM

**Wilson Okamoto Corporation**  
 1907 S. Beretania Street Suite 400  
 Honolulu, HI 96826

Counted By: GC  
 Counter: D4-5676  
 Weather: Clear

File Name : KamMid AM - 2  
 Site Code : 00000004  
 Start Date : 10/17/2013  
 Page No : 1

Groups Printed- Unshifted

Start Time	Middle Street						Right = Right Turn To H-1 On-Ramp Southbound						Westbound						Northbound						Off-Ramp From Nimitz Highway Eastbound							
	Left		Thru		Right		Peds		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total	
	Left	Thru	Right	Thru	Right	Peds	App. Total	Total	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total		
06:00 AM	0	0	38	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0	0	50	88	
06:15 AM	0	0	32	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	0	0	0	92	124	
06:30 AM	0	0	27	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	155	0	0	0	155	182	
06:45 AM	0	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	181	0	0	0	181	200	
Total	0	0	116	0	0	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	478	0	0	0	478	594	
07:00 AM	0	0	21	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	0	0	0	177	198	
07:15 AM	0	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	226	0	0	0	226	245	
07:30 AM	0	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	0	0	0	225	240	
07:45 AM	0	0	16	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212	0	0	0	212	228	
Total	0	0	71	0	0	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840	0	0	0	840	911	
08:00 AM	0	0	27	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	0	160	187	
08:15 AM	0	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165	0	0	0	165	184	
08:30 AM	0	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183	0	0	0	183	198	
08:45 AM	0	0	12	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119	0	0	0	119	131	
Total	0	0	73	0	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	627	0	0	0	627	700	
Grand Total	0	0	260	0	0	260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1945	0	0	0	1945	2205	
Approch %	0	0	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	100		
Total %	0	0	11.8	0	0	11.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88.2	0	0	0	88.2		

Start Time	Middle Street						Right = Right Turn To H-1 On-Ramp Southbound						Westbound						Northbound						Off-Ramp From Nimitz Highway Eastbound							
	Left		Thru		Right		Peds		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total		App. Total		Total	
	Left	Thru	Right	Thru	Right	Peds	App. Total	Total	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total	Left	Thru	Right	Peds	App. Total	Total		
07:00 AM	0	0	21	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	0	0	0	177	198
07:15 AM	0	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	226	0	0	0	226	245	
07:30 AM	0	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	0	0	0	225	240	
07:45 AM	0	0	16	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212	0	0	0	212	228	
Total Volume	0	0	71	0	0	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	840	0	0	0	840	911	
% App. Total	0	0	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	100		
PHF	.000	.000	.845	.000	.845	.845	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.929	.000	.000	.929	.930		

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 07:00 AM

**Wilson Okamoto Corporation**  
 1907 S. Beretania Street Suite 400  
 Honolulu, HI 96826

Counted By: GC, CY  
 Counter: D4-5676, D5675  
 Weather: Clear

File Name : KamMid PM - 1  
 Site Code : 00000004  
 Start Date : 10/17/2013  
 Page No : 1

Groups Printed- Unshifted

Start Time	Middle Street Left = Left Turn To Kamehameha Highway, Right = Right Turn To Nimitz Highway Southbound					Kamehameha Highway Westbound					Northbound					H-1 Freeway Left = Left Turn To Middle Street, Thru = Thru To Kamehameha Highway Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
03:00 PM	82	0	23	0	105	0	152	71	0	223	0	60	210	0	270	67	228	0	0	295	642				
03:15 PM	65	0	28	0	93	0	187	67	0	254	0	63	175	0	238	637									
03:30 PM	71	0	14	0	85	0	251	62	1	314	40	186	0	0	226	614									
03:45 PM	84	0	28	0	112	0	218	58	0	276	230	799	0	0	1029	2491									
Total	302	0	93	0	395	0	808	258	1	1067	0	27	191	0	218	45	159	0	0	204	615				
04:00 PM	81	0	16	0	97	0	250	50	0	300	28	142	0	0	170	616									
04:15 PM	71	0	33	0	104	0	252	89	5	346	28	165	0	0	193	642									
04:30 PM	77	0	29	0	106	0	267	73	0	340	128	657	0	0	785	2527									
04:45 PM	69	0	30	0	99	0	281	69	0	350	30	127	0	0	157	551									
Total	298	0	108	0	406	0	1050	281	5	1336	38	123	0	0	161	601									
05:00 PM	67	0	32	0	99	0	237	58	0	295	39	126	0	0	165	521									
05:15 PM	61	0	29	0	90	0	277	71	2	350	19	94	0	0	113	469									
05:30 PM	57	0	34	0	91	0	210	55	0	265	126	470	0	0	596	2142									
05:45 PM	44	0	22	0	66	0	224	66	0	290	484	1926	0	0	2410	7160									
Total	229	0	117	0	346	0	948	250	2	1200	20.1	79.9	0	0	33.7										
Grand Total	829	0	318	0	1147	0	2806	789	8	3603	6.8	26.9	0	0											
Approach %	72.3	0	27.7	0	16	0	77.9	21.9	0.2	50.3															
Total %	11.6	0	4.4	0		0	39.2	11	0.1																

Start Time	Middle Street Left = Left Turn To Kamehameha Highway, Right = Right Turn To Nimitz Highway Southbound					Kamehameha Highway Westbound					Northbound					H-1 Freeway Left = Left Turn To Middle Street, Thru = Thru To Kamehameha Highway Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
04:00 PM	81	0	16	0	97	0	250	50	0	300	0	27	191	0	218	45	159	0	0	204	615				
04:15 PM	71	0	33	0	104	0	252	89	5	346	28	142	0	0	170	637									
04:30 PM	77	0	29	0	106	0	267	73	0	340	40	186	0	0	226	614									
04:45 PM	69	0	30	0	99	0	281	69	0	350	230	799	0	0	1029	2491									
Total	298	0	108	0	406	0	1050	281	5	1336	0	27	191	0	218	45	159	0	0	204	615				
05:00 PM	67	0	32	0	99	0	237	58	0	295	28	142	0	0	170	616									
05:15 PM	61	0	29	0	90	0	252	89	5	346	28	165	0	0	193	642									
05:30 PM	57	0	34	0	91	0	267	73	0	340	128	657	0	0	785	2527									
05:45 PM	44	0	22	0	66	0	281	69	0	350	30	127	0	0	157	551									
Total	229	0	117	0	346	0	1050	281	5	1336	38	123	0	0	161	601									
Grand Total	829	0	318	0	1147	0	2806	789	8	3603	20.1	79.9	0	0	33.7										
Approach %	72.3	0	27.7	0	16	0	77.9	21.9	0.2	50.3	6.8	26.9	0	0											
Total %	11.6	0	4.4	0		0	39.2	11	0.1																

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:00 PM

Start Time	Middle Street Left = Left Turn To Kamehameha Highway, Right = Right Turn To Nimitz Highway Southbound					Kamehameha Highway Westbound					Northbound					H-1 Freeway Left = Left Turn To Middle Street, Thru = Thru To Kamehameha Highway Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
04:00 PM	81	0	16	0	97	0	250	50	0	300	0	27	191	0	218	45	159	0	0	204	615				
04:15 PM	71	0	33	0	104	0	252	89	5	346	28	142	0	0	170	637									
04:30 PM	77	0	29	0	106	0	267	73	0	340	40	186	0	0	226	614									
04:45 PM	69	0	30	0	99	0	281	69	0	350	230	799	0	0	1029	2491									
Total	298	0	108	0	406	0	1050	281	5	1336	0	27	191	0	218	45	159	0	0	204	615				
% App. PHF	73.4	0	26.6	0	.958	0	78.9	21.1	0	.951	.000	.711	.860	.000	.900	.000	.900	.000	.000	.971					



**Wilson Okamoto Corporation**  
 1907 S. Beretania Street Suite 400  
 Honolulu, HI 96826

Counted By:GC, CY  
 Counter:D4-5676, D4-5675  
 Weather:Clear

File Name : KamMid PM - 2  
 Site Code : 00000004  
 Start Date : 10/17/2013  
 Page No : 1

Groups Printed- Unshifted

Start Time	Middle Street				Right = Right Turn To H-1 On-Ramp Southbound				Westbound				Northbound				Off-Ramp From Nimitz Highway Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	0	48	0	48	0	0	0	0	0	0	0	0	0	0	0	118	0	0	0	0	118	0	0	0	166
03:15 PM	0	0	27	0	27	0	0	0	0	0	0	0	0	0	0	0	122	0	0	0	0	122	0	0	0	149
03:30 PM	0	0	48	0	48	0	0	0	0	0	0	0	0	0	0	0	172	0	0	0	0	172	0	0	0	220
03:45 PM	0	0	31	0	31	0	0	0	0	0	0	0	0	0	0	0	138	0	0	0	0	138	0	0	0	169
Total	0	0	154	0	154	0	0	0	0	0	0	0	0	0	0	0	550	0	0	0	0	550	0	0	0	704
04:00 PM	0	0	41	0	41	0	0	0	0	0	0	0	0	0	0	0	136	0	0	0	0	136	0	0	0	177
04:15 PM	0	0	29	0	29	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0	0	150	0	0	0	179
04:30 PM	0	0	40	0	40	0	0	0	0	0	0	0	0	0	0	0	145	0	0	0	0	145	0	0	0	185
04:45 PM	0	0	43	0	43	0	0	0	0	0	0	0	0	0	0	0	136	0	0	0	0	136	0	0	0	179
Total	0	0	153	0	153	0	0	0	0	0	0	0	0	0	0	0	567	0	0	0	0	567	0	0	0	720
05:00 PM	0	0	25	0	25	0	0	0	0	0	0	0	0	0	0	0	153	0	0	0	0	153	0	0	0	178
05:15 PM	0	0	24	0	24	0	0	0	0	0	0	0	0	0	0	0	120	0	0	0	0	120	0	0	0	144
05:30 PM	0	0	34	0	34	0	0	0	0	0	0	0	0	0	0	0	109	0	0	0	0	109	0	0	0	143
05:45 PM	0	0	19	0	19	0	0	0	0	0	0	0	0	0	0	0	62	0	0	0	0	62	0	0	0	81
Total	0	0	102	0	102	0	0	0	0	0	0	0	0	0	0	0	444	0	0	0	0	444	0	0	0	546
Grand Total	0	0	409	0	409	0	0	0	0	0	0	0	0	0	0	0	1561	0	0	0	0	1561	0	0	0	1970
Apprch %	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	100	0	0	0	178
Total %	0	0	20.8	0	20.8	0	0	0	0	0	0	0	0	0	0	0	79.2	0	0	0	0	79.2	0	0	0	144

Start Time	Middle Street				Right = Right Turn To H-1 On-Ramp Southbound				Westbound				Northbound				Off-Ramp From Nimitz Highway Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:30 PM	0	0	48	0	48	0	0	0	0	0	0	0	0	0	0	0	172	0	0	0	0	172	0	0	0	220
03:45 PM	0	0	31	0	31	0	0	0	0	0	0	0	0	0	0	0	138	0	0	0	0	138	0	0	0	169
04:00 PM	0	0	41	0	41	0	0	0	0	0	0	0	0	0	0	0	136	0	0	0	0	136	0	0	0	177
04:15 PM	0	0	29	0	29	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0	0	150	0	0	0	179
Total Volume	0	0	149	0	149	0	0	0	0	0	0	0	0	0	0	0	596	0	0	0	0	596	0	0	0	745
% App. Total	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	100	0	0	0	847
PHF	.000	.000	.776	0	.776	.000	.000	.000	0	.000	.000	.000	.000	0	.000	.000	.866	.000	.000	0	.000	.866	.000	.000	0	.847

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 03:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: GC, PA  
Counter: TU-0651, D4-5671  
Weather: Clear

File Name : DiILau AM  
Site Code : 00000001  
Start Date : 1/15/2013  
Page No : 1

Start Time	Groups Printed- Unshifted										Int. Total										
	Laumaka Street Southbound					Dillingham Boulevard Westbound						OCCC Employee Parking Driveway Northbound					Dillingham Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
06:00 AM	4	0	4	0	8	4	109	5	0	118	13	1	10	0	24	16	230	12	0	258	408
06:15 AM	1	2	0	3	6	3	102	16	1	122	4	2	1	0	7	11	271	3	0	285	420
06:30 AM	3	1	2	3	9	0	103	17	2	122	3	1	2	0	6	19	462	6	0	487	624
06:45 AM	3	0	4	5	12	1	125	18	2	146	2	0	3	0	5	25	484	7	0	516	679
Total	11	3	10	11	35	8	439	56	5	508	22	4	16	0	42	71	1447	28	0	1546	2131
07:00 AM	4	0	4	14	22	2	135	6	6	149	3	0	1	1	5	27	540	2	0	569	745
07:15 AM	8	0	0	3	11	4	161	20	2	187	0	2	1	0	3	16	576	4	0	596	797
07:30 AM	6	0	4	6	16	2	153	19	6	180	0	0	4	0	4	20	549	4	0	573	773
07:45 AM	16	0	6	2	24	4	209	23	2	238	0	2	0	0	2	17	528	3	0	548	812
Total	34	0	14	25	73	12	658	68	16	754	3	4	6	1	14	80	2193	13	0	2286	3127
08:00 AM	13	1	3	2	19	4	150	23	11	188	1	1	2	0	4	23	525	6	0	554	765
08:15 AM	10	0	6	5	21	4	151	19	5	179	4	1	4	0	9	28	471	7	0	506	715
08:30 AM	10	3	3	3	19	11	144	25	0	180	1	2	2	0	5	24	434	5	0	463	667
08:45 AM	9	1	8	0	18	6	171	14	1	192	0	0	4	0	4	20	334	6	0	360	574
Total	42	5	20	10	77	25	616	81	17	739	6	4	12	0	22	95	1764	24	0	1883	2721
Grand Total	87	8	44	46	185	45	1713	205	38	2001	31	12	34	1	78	246	5404	65	0	5715	7979
Approach %	47	4.3	23.8	24.9	2.3	2.2	85.6	10.2	1.9	39.7	15.4	43.6	1.3	0	1	4.3	94.6	1.1	0	71.6	
Total %	1.1	0.1	0.6	0.6	2.3	0.6	21.5	2.6	0.5	25.1	0.4	0.2	0.4	0	1	3.1	67.7	0.8	0		

Start Time	Laumaka Street Southbound										Int. Total										
	Laumaka Street Southbound					Dillingham Boulevard Westbound						OCCC Employee Parking Driveway Northbound					Dillingham Boulevard Eastbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
07:15 AM	8	0	0	0	8	4	161	20	20	185	0	2	1	1	3	16	576	4	4	596	792
07:30 AM	6	0	4	4	10	2	153	19	19	174	0	0	4	4	4	20	549	4	4	573	761
07:45 AM	16	0	0	6	22	4	209	23	23	236	0	2	0	0	2	17	528	3	3	548	808
08:00 AM	13	1	3	3	17	4	150	23	23	177	1	1	2	2	4	23	525	6	6	554	752
Total Volume	43	1	13	13	57	14	673	85	85	772	1	5	7	7	13	76	2178	17	17	2271	3113
% App. Total	75.4	1.8	22.8	22.8	648	1.8	87.2	11	11	818	7.7	38.5	53.8	438	.813	3.3	95.9	0.7	0.7	.953	
PHF	.672	.250	.542	.542	.648	.875	.805	.924	.924	.818	.250	.625	.438	.438	.813	.826	.945	.708	.708	.963	

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: GC, PA  
Counter: D4-5671, TU-0651  
Weather: Clear

File Name : DilLau PM  
Site Code : 00000001  
Start Date : 1/15/2013  
Page No : 1

Start Time	Groups Printed- Unshifted												Int. Total								
	Laumaka Street Southbound				Dillingham Boulevard Westbound				OCCC Employee Parking Driveway Northbound					Dillingham Boulevard Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru		Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
03:00 PM	16	0	8	2	26	2	270	26	0	298	1	1	3	0	5	9	214	3	0	226	555
03:15 PM	11	2	3	2	18	2	263	40	3	308	7	1	5	1	14	39	247	1	0	287	627
03:30 PM	5	0	14	1	20	1	317	17	1	336	3	3	4	1	11	22	97	0	0	119	486
03:45 PM	10	1	2	7	20	14	302	61	4	381	1	0	6	0	7	27	456	1	0	484	892
Total	42	3	27	12	84	19	1152	144	8	1323	12	5	18	2	37	97	1014	5	0	1116	2560
04:00 PM	10	0	10	2	22	2	299	37	2	340	1	0	1	1	3	33	406	1	0	440	805
04:15 PM	16	2	10	2	30	0	252	29	3	284	1	1	2	0	4	23	366	1	0	390	708
04:30 PM	11	0	12	5	28	2	320	21	1	344	1	0	10	0	11	27	365	2	0	394	777
04:45 PM	10	0	6	4	20	3	313	19	4	339	6	1	3	0	10	8	365	1	0	374	743
Total	47	2	38	13	100	7	1184	106	10	1307	9	2	16	1	28	91	1502	5	0	1598	3033
05:00 PM	6	1	4	6	17	0	282	15	3	300	2	1	1	0	4	22	343	1	0	366	687
05:15 PM	12	0	3	4	19	1	296	28	3	328	2	0	1	0	3	19	368	1	0	388	738
05:30 PM	5	0	4	3	12	2	243	12	1	258	1	1	1	0	3	20	314	0	0	334	607
05:45 PM	3	0	2	6	11	0	288	11	1	300	3	0	1	1	5	11	192	1	0	204	520
Total	26	1	13	19	59	3	1109	66	8	1186	8	2	4	1	15	72	1217	3	0	1292	2552
Grand Total	115	6	78	44	243	29	3445	316	26	3816	29	9	38	4	80	260	3733	13	0	4006	8145
Approach %	47.3	2.5	32.1	18.1		0.8	90.3	8.3	0.7		36.2	11.2	47.5	5		6.5	93.2	0.3	0		
Total %	1.4	0.1	1	0.5	3	0.4	42.3	3.9	0.3	46.9	0.4	0.1	0.5	0	1	3.2	45.8	0.2	0	49.2	

Start Time	Dillingham Boulevard Westbound												Dillingham Boulevard Eastbound											
	Laumaka Street Southbound				OCCC Employee Parking Driveway Northbound				Dillingham Boulevard Westbound				OCCC Employee Parking Driveway Northbound				Dillingham Boulevard Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds
03:45 PM	10	1	2	2	13	14	302	61	377	1	0	6	7	27	456	1	484	881						
04:00 PM	10	0	10	10	20	2	299	37	338	1	0	1	2	33	406	1	440	800						
04:15 PM	16	2	10	2	28	0	252	29	281	1	1	2	4	23	366	1	390	703						
04:30 PM	11	0	12	5	23	2	320	21	343	1	0	10	11	27	365	2	394	771						
Total Volume	47	3	34	34	84	18	1173	148	1339	4	1	19	24	110	1593	5	1708	3155						
% App. Total	56	3.6	40.5	40.5		1.3	87.6	11.1		16.7	4.2	79.2		6.4	93.3	0.3								
PHF	.734	.375	.708	.708	.750	.321	.916	.607	.888	1.00	.250	.475	.545	.833	.873	.625	.882	.895						

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, MD  
Counter: D4-5672, TU-0650  
Weather: Clear

File Name : DiIPuu AM  
Site Code : 00000002  
Start Date : 1/15/2013  
Page No : 1

Groups Printed - Unshifted

Start Time	Puuhale Road Southbound				Dillingham Boulevard Westbound				Puuhale Road Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
06:00 AM	5	14	14	3	36	14	83	0	4	101	17	0	5	1	23	0	204	34	6	244	404
06:15 AM	6	12	14	5	37	14	94	0	10	118	25	0	7	0	32	0	225	46	6	277	464
06:30 AM	3	11	14	1	29	11	94	0	8	113	19	0	10	7	36	0	370	96	8	474	652
06:45 AM	4	28	14	4	50	7	104	0	8	119	22	0	11	1	34	0	380	111	8	499	702
Total	18	65	56	13	152	46	375	0	30	451	83	0	33	9	125	0	1179	287	28	1494	2222
07:00 AM	7	15	20	3	45	7	102	0	8	117	31	0	15	12	58	0	387	150	7	544	764
07:15 AM	3	21	12	5	41	11	157	0	8	176	19	0	8	12	39	0	387	199	7	593	849
07:30 AM	9	22	20	6	57	13	126	0	21	160	36	0	11	0	47	0	378	192	3	573	837
07:45 AM	4	14	15	9	42	12	160	0	18	190	51	0	15	5	71	0	349	192	7	548	851
Total	23	72	67	23	185	43	545	0	55	643	137	0	49	29	215	0	1501	733	24	2258	3301
08:00 AM	4	23	16	1	44	3	130	0	14	147	45	0	6	2	53	0	359	188	9	556	800
08:15 AM	8	14	13	7	42	14	138	0	11	163	27	0	20	0	47	0	358	113	4	475	727
08:30 AM	5	16	18	1	40	11	137	0	3	151	34	0	16	3	53	0	342	102	6	450	694
08:45 AM	7	10	14	2	33	24	144	0	8	176	41	0	16	0	57	0	279	69	8	356	622
Total	24	63	61	11	159	52	549	0	36	637	147	0	58	5	210	0	1338	472	27	1837	2843
Grand Total	65	200	184	47	496	141	1469	0	121	1731	367	0	140	43	550	0	4018	1492	79	5589	8366
Approch %	13.1	40.3	37.1	9.5		8.1	84.9	0	7		66.7	0	25.5	7.8		0	71.9	26.7	1.4		
Total %	0.8	2.4	2.2	0.6	5.9	1.7	17.6	0	1.4	20.7	4.4	0	1.7	0.5	6.6	0	48	17.8	0.9	66.8	

Start Time	Puuhale Road Southbound				Dillingham Boulevard Westbound				Puuhale Road Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	21	12	12	36	11	157	0	0	168	19	0	8	27	0	387	199	586	817		
07:30 AM	9	22	20	20	51	13	126	0	0	139	36	0	11	47	0	378	192	570	807		
07:45 AM	4	14	15	15	33	12	160	0	0	172	51	0	15	66	0	349	192	541	812		
08:00 AM	4	23	16	16	43	3	130	0	0	133	45	0	6	51	0	359	188	547	774		
Total Volume	20	80	63	63	163	39	573	0	0	612	151	0	40	191	0	1473	771	2244	3210		
% App. Total	12.3	49.1	38.7			6.4	93.6	0			79.1	0	20.9			0	65.6	34.4			
PHF	.556	.870	.788		.799	.750	.895	.000		.890	.740	.000	.667	.723	.000	.952	.969	.957		.982	







# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RF, LH  
Counter: D4-3888, D4-5673  
Weather: Clear

File Name : DiIMok PM  
Site Code : 00000000  
Start Date : 1/15/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Mokauea Street Southbound						Dillingham Boulevard Westbound						Mokauea Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	03:00 PM	10	16	9	4	39		6	224	20	15	265		7	48	20	3	78		10	211	7	6	234
03:15 PM	13	22	5	5	45		1	174	26	15	216		9	44	15	2	70		51	89	5	4	149	
03:30 PM	10	35	14	6	65		8	226	30	29	293		15	52	20	3	90		32	67	6	2	107	
03:45 PM	12	35	13	11	71		10	263	20	32	325		18	62	11	9	100		23	328	11	4	366	
Total	45	108	41	26	220		25	887	96	91	1099		49	206	66	17	338		116	695	29	16	856	
04:00 PM	12	21	13	7	53		3	205	19	18	245		13	63	18	5	99		39	321	8	9	377	
04:15 PM	17	27	5	7	56		3	200	21	28	252		16	48	20	5	89		29	300	10	12	351	
04:30 PM	10	15	12	5	42		5	251	25	19	290		16	42	23	1	82		15	326	5	4	350	
04:45 PM	14	12	5	5	36		7	229	31	19	286		14	53	7	7	81		28	299	3	6	336	
Total	53	75	35	24	187		18	885	96	74	1073		59	206	68	18	351		111	1246	26	31	1414	
05:00 PM	12	13	14	6	45		2	215	25	6	248		15	40	19	5	79		24	312	2	7	345	
05:15 PM	18	19	18	5	60		2	221	26	12	261		15	34	6	7	62		33	353	5	5	396	
05:30 PM	12	12	4	7	35		3	182	23	3	211		7	38	12	0	57		21	274	2	11	308	
05:45 PM	11	6	8	9	34		4	202	14	10	230		12	32	7	5	56		10	171	5	11	197	
Total	53	50	44	27	174		11	820	88	31	950		49	144	44	17	254		88	1110	14	34	1246	
Grand Total	151	233	120	77	581		54	2592	280	196	3122		157	556	178	52	943		315	3051	69	81	3516	
Approach %	26	40.1	20.7	13.3			1.7	83	9	6.3			16.6	59	18.9	5.5			9	86.8	2	2.3		
Total %	1.9	2.9	1.5	0.9	7.1		0.7	31.8	3.4	2.4	38.3		1.9	6.8	2.2	0.6	11.6		3.9	37.4	0.8	1	43.1	

Start Time	Mokauea Street Southbound						Dillingham Boulevard Westbound						Mokauea Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	03:45 PM	12	35	13		60		10	263	20		293		18	62	11		91		23	328	11		362
04:00 PM	12	21	13		46		3	205	19		227		13	63	18		94		39	321	8		368	
04:15 PM	17	27	5		49		3	200	21		224		16	48	20		84		29	300	10		339	
04:30 PM	10	15	12		37		5	251	25		281		16	42	23		81		15	326	5		346	
Total Volume	51	98	43		192		21	919	85		1025		63	215	72		350		106	1275	34		1415	
% App. Total	26.6	51	22.4		.800		2	89.7	8.3		.875		18	61.4	20.6		7.5		7.5	90.1	2.4		.961	
PHF	.750	.700	.827				.525	.874	.850		.875		.875	.853	.783		.931		.679	.972	.773		.925	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:45 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: JL, DS  
Counter: T-1839, T-1841  
Weather: Clear

File Name : DiKal AM  
Site Code : 00000004  
Start Date : 1/15/2013  
Page No : 1

Groups Printed - Unshifted

Start Time	Kalihi Street Southbound						Dillingham Boulevard Westbound						Kalihi Street Northbound						Dillingham Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
06:00 AM	11	59	5	0	75		13	58	9	6	86		1	40	5	1	47		5	190	10	3	208		416
06:15 AM	10	87	5	8	110		26	76	5	0	107		1	36	5	9	51		4	210	12	7	233		501
06:30 AM	17	86	4	0	107		26	90	10	1	127		7	26	8	0	41		15	314	12	3	344		619
06:45 AM	11	77	3	0	91		30	108	17	0	155		1	43	10	5	59		16	385	11	2	414		719
Total	49	309	17	8	383		95	332	41	7	475		10	145	28	15	198		40	1099	45	15	1199		2255
07:00 AM	10	57	6	0	73		31	87	11	0	129		1	42	14	2	59		43	368	23	0	434		695
07:15 AM	18	87	15	0	120		36	113	24	0	173		8	85	4	21	118		21	385	11	2	419		830
07:30 AM	12	90	5	0	107		37	130	33	0	200		8	72	8	2	90		14	397	9	0	420		817
07:45 AM	12	98	8	0	118		43	138	19	0	200		0	58	3	3	64		13	339	17	10	379		761
Total	52	332	34	0	418		147	468	87	0	702		17	257	29	28	331		91	1489	60	12	1652		3103
08:00 AM	16	74	12	0	102		26	118	13	0	157		6	76	3	0	85		15	305	12	0	332		676
08:15 AM	13	76	8	0	97		36	115	35	0	186		3	77	8	3	91		26	384	7	4	421		795
08:30 AM	10	67	6	0	83		19	109	18	0	146		7	63	11	4	85		29	417	18	3	467		781
08:45 AM	12	70	10	2	94		22	129	15	0	166		10	61	14	6	91		25	268	21	4	318		669
Total	51	287	36	2	376		103	471	81	0	655		26	277	36	13	352		95	1374	58	11	1538		2921
Grand Total	152	928	87	10	1177		345	1271	209	7	1832		53	679	93	56	881		226	3962	163	38	4389		8279
Approach %	12.9	78.8	7.4	0.8			18.8	69.4	11.4	0.4			6	77.1	10.6	6.4			5.1	90.3	3.7	0.9			
Total %	1.8	11.2	1.1	0.1	14.2		4.2	15.4	2.5	0.1	22.1		0.6	8.2	1.1	0.7	10.6		2.7	47.9	2	0.5	53		

Start Time	Kalihi Street Southbound						Dillingham Boulevard Westbound						Kalihi Street Northbound						Dillingham Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
07:00 AM	10	57	6	0	73		31	87	11	0	129		1	42	14	2	59		43	368	23	0	434		693
07:15 AM	18	87	15	0	120		36	113	24	0	173		8	85	4	21	118		21	385	11	2	419		807
07:30 AM	12	90	5	0	107		37	130	33	0	200		8	72	8	2	90		14	397	9	0	420		815
07:45 AM	12	98	8	0	118		43	138	19	0	200		0	58	3	3	61		13	339	17	10	369		748
Total Volume	52	332	34	0	418		147	468	87	0	702		17	257	29	28	303		91	1489	60	12	1640		3063
% App. Total	12.4	79.4	8.1				20.9	66.7	12.4				5.6	84.8	9.6				5.5	90.8	3.7				
PHF	.722	.847	.567		.871		.855	.848	.659		.878		.531	.756	.518		.781		.529	.938	.652			.945	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:00 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: JL, DS  
Counter: T-1839, T-1841  
Weather: Clear

File Name : DiKaI PM  
Site Code : 00000004  
Start Date : 1/15/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Kalihii Street Southbound						Dillingham Boulevard Westbound						Kalihii Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
03:00 PM	11	45	14	2	72		23	198	35	0	256		18	97	7	6	128		28	186	18	4	236	
03:15 PM	9	61	10	4	84		13	160	35	0	208		6	118	6	11	141		35	71	8	1	115	
03:30 PM	15	55	9	0	79		21	247	42	0	310		9	166	8	1	184		43	65	7	0	115	
03:45 PM	15	50	12	0	77		17	263	49	2	331		11	125	12	3	151		38	333	11	5	387	
Total	50	211	45	6	312		74	868	161	2	1105		44	506	33	21	604		144	655	44	10	853	
04:00 PM	8	60	13	0	81		18	180	36	2	236		9	107	6	3	125		36	306	18	0	360	
04:15 PM	6	71	11	5	93		11	237	42	0	290		24	175	2	0	201		38	325	7	0	370	
04:30 PM	17	51	9	0	77		12	230	43	0	285		10	130	2	1	143		68	294	6	0	368	
04:45 PM	12	42	10	0	64		10	262	59	0	331		6	109	1	3	119		26	247	10	0	283	
Total	43	224	43	5	315		51	909	180	2	1142		49	521	11	7	588		168	1172	41	0	1381	
05:00 PM	15	39	3	0	57		17	190	57	0	264		6	112	3	0	121		38	283	5	0	326	
05:15 PM	16	44	7	0	67		11	252	40	0	303		3	117	1	0	121		54	320	6	0	380	
05:30 PM	19	45	9	0	73		9	167	47	0	223		7	59	4	0	70		43	240	5	0	288	
05:45 PM	15	40	6	0	61		12	222	43	0	277		6	94	2	3	105		30	177	2	0	209	
Total	65	168	25	0	258		49	831	187	0	1067		22	382	10	3	417		165	1020	18	0	1203	
Grand Total	158	603	113	11	885		174	2608	528	4	3314		115	1409	54	31	1609		477	2847	103	10	3437	
Approch %	17.9	68.1	12.8	1.2	9.6		5.3	78.7	15.9	0.1	35.8		7.1	87.6	3.4	1.9	17.4		13.9	82.8	3	0.3	37.2	
Total %	1.7	6.5	1.2	0.1	9.6		1.9	28.2	5.7	0	35.8		1.2	15.2	0.6	0.3	17.4		5.2	30.8	1.1	0.1	37.2	

Start Time	Kalihii Street Southbound						Dillingham Boulevard Westbound						Kalihii Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
03:45 PM	15	50	12	0	77		17	263	49	0	329		11	125	12	0	148		38	333	11	0	382	
04:00 PM	8	60	13	0	81		18	180	36	0	234		9	107	6	0	122		36	306	18	0	360	
04:15 PM	6	71	11	5	93		11	237	42	0	290		24	175	2	0	201		38	325	7	0	370	
04:30 PM	17	51	9	0	77		12	230	43	0	285		10	130	2	1	143		68	294	6	0	368	
04:45 PM	12	42	10	0	64		10	262	59	0	331		6	109	1	3	119		26	247	10	0	283	
Total	43	224	43	5	315		51	909	180	2	1142		49	521	11	7	588		168	1172	41	0	1381	
05:00 PM	15	39	3	0	57		17	190	57	0	264		6	112	3	0	121		38	283	5	0	326	
05:15 PM	16	44	7	0	67		11	252	40	0	303		3	117	1	0	121		54	320	6	0	380	
05:30 PM	19	45	9	0	73		9	167	47	0	223		7	59	4	0	70		43	240	5	0	288	
05:45 PM	15	40	6	0	61		12	222	43	0	277		6	94	2	3	105		30	177	2	0	209	
Total	65	168	25	0	258		49	831	187	0	1067		22	382	10	3	417		165	1020	18	0	1203	
Grand Total	158	603	113	11	885		174	2608	528	4	3314		115	1409	54	31	1609		477	2847	103	10	3437	
Approch %	17.9	68.1	12.8	1.2	9.6		5.3	78.7	15.9	0.1	35.8		7.1	87.6	3.4	1.9	17.4		13.9	82.8	3	0.3	37.2	
Total %	1.7	6.5	1.2	0.1	9.6		1.9	28.2	5.7	0	35.8		1.2	15.2	0.6	0.3	17.4		5.2	30.8	1.1	0.1	37.2	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:45 PM

03:45 PM	15	50	12	0	77		17	263	49	0	329		11	125	12	0	148		38	333	11	0	382	
04:00 PM	8	60	13	0	81		18	180	36	0	234		9	107	6	0	122		36	306	18	0	360	
04:15 PM	6	71	11	5	93		11	237	42	0	290		24	175	2	0	201		38	325	7	0	370	
04:30 PM	17	51	9	0	77		12	230	43	0	285		10	130	2	1	142		68	294	6	0	368	
Total Volume	46	232	45	0	323		58	910	170	0	1138		54	537	22	0	613		180	1258	42	0	1480	
% App. Total	14.2	71.8	13.9	0	9.6		5.1	80	14.9	0	35.8		8.8	87.6	3.6	0	17.4		12.2	85	2.8	0	37.2	
PHF	.676	.817	.865		.918		.806	.865	.867		.865		.563	.767	.458		.762		.662	.944	.583		.969	

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By:GC, DS  
Counter:T-1839, T-1841  
Weather:Clear

File Name : D:\McN AM  
Site Code : 00000001  
Start Date : 1/17/2013  
Page No : 1

Start Time	Groups Printed- Unshifted												Int. Total								
	McNeill Street Southbound				Dillingham Boulevard Westbound				McNeill Street Northbound					Dillingham Boulevard Eastbound							
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		Left	Thru	Right	Peds				
06:00 AM	1	7	23	5	36	1	64	2	2	69	3	1	6	2	12	9	208	16	7	240	357
06:15 AM	3	5	24	9	41	4	84	1	8	97	6	4	9	2	21	4	268	9	6	287	446
06:30 AM	2	5	25	7	39	3	97	0	10	110	15	4	10	3	32	10	335	14	9	368	549
06:45 AM	1	5	19	13	38	2	139	2	7	150	3	3	7	3	16	3	372	15	9	399	603
Total	7	22	91	34	154	10	384	5	27	426	27	12	32	10	81	26	1183	54	31	1294	1955
07:00 AM	4	4	30	6	44	4	141	3	13	161	15	4	14	3	36	11	380	19	5	415	656
07:15 AM	7	5	34	4	50	4	165	1	7	177	15	8	17	6	46	5	395	15	10	425	698
07:30 AM	9	16	46	7	78	3	169	3	9	184	10	6	12	1	29	8	343	8	5	364	655
07:45 AM	6	9	43	16	74	2	163	2	29	196	8	7	6	2	23	13	360	14	14	401	694
Total	26	34	153	33	246	13	638	9	58	718	48	25	49	12	134	37	1478	56	34	1605	2703
08:00 AM	8	5	24	9	46	6	157	0	9	172	14	6	11	1	32	12	310	13	6	341	591
08:15 AM	3	8	29	5	45	1	169	0	14	184	17	9	8	0	34	14	351	15	8	388	651
08:30 AM	7	6	31	4	48	1	155	5	10	171	11	1	12	0	24	15	350	15	13	393	636
08:45 AM	5	9	20	7	41	4	143	0	13	160	14	7	11	0	32	13	351	16	9	389	622
Total	23	28	104	25	180	12	624	5	46	687	56	23	42	1	122	54	1362	59	36	1511	2500
Grand Total	56	84	348	92	580	35	1646	19	131	1831	131	60	123	23	337	117	4023	169	101	4410	7158
Approch %	9.7	14.5	60	15.9	8.1	1.9	89.9	1	7.2	38.9	17.8	36.5	6.8	6.8	4.7	2.7	91.2	3.8	2.3	61.6	
Total %	0.8	1.2	4.9	1.3	8.1	0.5	23	0.3	1.8	25.6	1.8	0.8	1.7	0.3	4.7	1.6	56.2	2.4	1.4	61.6	

Start Time	Dillingham Boulevard Westbound												McNeill Street Northbound				Int. Total
	Dillingham Boulevard Westbound				McNeill Street Northbound				Dillingham Boulevard Eastbound								
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00 AM	4	141	3	148	15	4	14	33	11	380	19	410	629				
07:15 AM	4	165	1	170	15	8	17	40	5	395	15	415	671				
07:30 AM	3	169	3	175	10	6	12	28	8	343	8	359	633				
07:45 AM	2	163	2	167	8	7	6	21	13	360	14	387	633				
Total Volume	26	638	9	660	48	25	49	122	37	1478	56	1571	2566				
% App. Total	12.2	96.7	1.4	39.3	20.5	40.2	3.6	7.63	2.4	94.1	3.6	9.46					
PHF	.722	.531	.832	.750	.813	.944	.750	.943	.800	.781	.721	.935	.946				



**Wilson Okamoto Corporation**  
 1907 S. Beretania Street, Suite 400  
 Honolulu, Hawaii

Counted By:GC, DS  
 Counter:T-1839, T-1841  
 Weather:Clear

File Name : DiIMcN PM  
 Site Code : 00000001  
 Start Date : 1/17/2013  
 Page No : 1

Groups Printed- Unshifted

Start Time	McNeil Street Southbound						Dillingham Boulevard Westbound						McNeil Street Northbound						Dillingham Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	03:00 PM	6	13	21	9	49	5	257	8	13	283	29	8	7	4	48	15	217	28	13	273	15	217	28	13
03:15 PM	1	10	33	4	48	5	243	1	14	263	45	12	14	5	76	15	242	22	5	284	15	242	22	5	284
03:30 PM	3	10	32	4	49	10	250	6	23	289	37	9	6	3	55	14	297	24	11	346	14	297	24	11	346
03:45 PM	6	15	24	8	53	12	260	7	20	299	38	10	4	6	58	23	326	22	10	381	23	326	22	10	381
Total	16	48	110	25	199	32	1010	22	70	1134	149	39	31	18	237	67	1082	96	39	1284	67	1082	96	39	1284
04:00 PM	5	8	39	0	52	6	237	6	27	276	32	12	10	2	56	23	284	30	5	342	23	284	30	5	342
04:15 PM	1	4	15	0	20	7	206	7	16	236	41	6	19	0	66	15	294	21	5	335	15	294	21	5	335
04:30 PM	3	9	23	3	38	3	258	1	23	285	45	15	6	7	73	15	272	16	8	311	15	272	16	8	311
04:45 PM	1	8	21	10	40	2	281	8	24	315	33	10	8	2	53	15	293	26	11	345	15	293	26	11	345
Total	10	29	98	13	150	18	982	22	90	1112	151	43	43	11	248	68	1143	93	29	1333	68	1143	93	29	1333
05:00 PM	6	5	32	8	51	6	247	8	18	279	40	9	6	9	64	4	247	20	7	278	4	247	20	7	278
05:15 PM	3	3	20	8	34	2	244	4	13	263	37	7	9	3	56	22	266	24	5	317	22	266	24	5	317
05:30 PM	3	9	28	10	50	3	253	7	18	281	36	13	10	10	69	17	256	16	13	302	17	256	16	13	302
05:45 PM	3	4	26	6	39	9	207	11	20	247	32	12	7	2	53	22	223	21	7	273	22	223	21	7	273
Total	15	21	106	32	174	20	951	30	69	1070	145	41	32	24	242	65	992	81	32	1170	65	992	81	32	1170
Grand Total	41	98	314	70	523	70	2943	74	229	3316	445	123	106	53	727	200	3217	270	100	3787	200	3217	270	100	3787
Approach %	7.8	18.7	60	13.4		2.1	88.8	2.2	6.9		61.2	16.9	14.6	7.3		5.3	84.9	7.1	2.6		5.3	84.9	7.1	2.6	
Total %	0.5	1.2	3.8	0.8	6.3	0.8	35.2	0.9	2.7	39.7	5.3	1.5	1.3	0.6	8.7	2.4	38.5	3.2	1.2	45.3	2.4	38.5	3.2	1.2	45.3

Start Time	McNeil Street Southbound						Dillingham Boulevard Westbound						McNeil Street Northbound						Dillingham Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
	03:15 PM	1	10	33	4	48	5	243	1	14	263	45	12	14	5	76	15	242	22	5	284	15	242	22	5
03:30 PM	3	10	32	4	49	10	250	6	23	289	37	9	6	3	55	14	297	24	11	346	14	297	24	11	346
03:45 PM	6	15	24	8	53	12	260	7	20	299	38	10	4	6	58	23	326	22	10	381	23	326	22	10	381
Total	15	43	128	16	202	33	990	20	84	1127	152	43	34	16	245	75	1149	98	31	1353	75	1149	98	31	1353
% App. Total	7.4	21.3	63.4	7.9		2.9	87.8	1.8	7.5		62	17.6	13.9	6.5		5.5	84.9	7.2	2.3		5.5	84.9	7.2	2.3	
PHF	.625	.717	.821	.500	.953	.688	.952	.714	.778	.942	.844	.896	.607	.667	.806	.815	.881	.817	.705	.888	.815	.881	.817	.705	.888

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 03:15 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, YS  
Counter: D4-5672, TU-0650  
Weather: Clear

File Name : DiWai AM  
Site Code : 00000002  
Start Date : 1/17/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Waiakamilo Road Southbound				Dillingham Boulevard Westbound				Waiakamilo Road Northbound				Dillingham Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	5	54	24	15	98	15	45	4	0	64	2	20	1	0	23	41	177	8	0	226	411
06:15 AM	22	91	20	7	140	12	63	2	2	79	3	27	2	2	34	42	213	9	0	264	517
06:30 AM	20	86	38	10	154	11	63	5	1	80	3	32	3	0	38	59	286	22	1	368	640
06:45 AM	17	75	30	10	132	11	98	12	0	121	5	30	5	0	40	55	302	16	0	373	666
Total	64	306	112	42	524	49	269	23	3	344	13	109	11	2	135	197	978	55	1	1231	2234
07:00 AM	15	90	22	8	135	14	124	11	0	149	2	43	2	1	48	47	337	22	3	409	741
07:15 AM	17	100	30	15	162	10	135	12	0	157	3	61	5	0	69	63	335	27	2	427	815
07:30 AM	11	113	36	11	171	17	132	18	1	168	5	54	8	0	67	50	318	21	1	390	796
07:45 AM	31	95	42	13	181	10	117	13	0	140	7	64	6	0	77	52	320	26	0	398	796
Total	74	398	130	47	649	51	508	54	1	614	17	222	21	1	261	212	1310	96	6	1624	3148
08:00 AM	28	118	31	12	189	16	135	12	0	163	0	47	11	0	58	39	306	14	3	362	772
08:15 AM	21	91	33	10	155	11	134	25	0	170	12	41	18	0	71	32	321	15	1	369	765
08:30 AM	23	87	33	10	153	17	120	11	0	148	7	39	29	1	76	37	283	34	1	355	732
08:45 AM	18	111	30	9	168	15	111	19	0	145	25	56	35	0	116	44	269	50	1	364	793
Total	90	407	127	41	665	59	500	67	0	626	44	183	93	1	321	152	1179	113	6	1450	3062
Grand Total	228	1111	369	130	1838	159	1277	144	4	1584	74	514	125	4	717	561	3467	264	13	4305	8444
Approach %	12.4	60.4	20.1	7.1	21.8	10.3	71.7	17.4	0.6	18.8	10.3	71.7	17.4	0.6	8.5	13	80.5	6.1	0.3	51	
Total %	2.7	13.2	4.4	1.5	21.8	1.9	15.1	1.7	0	18.8	0.9	6.1	1.5	0	8.5	6.6	41.1	3.1	0.2	51	

Start Time	Waiakamilo Road Southbound				Dillingham Boulevard Westbound				Waiakamilo Road Northbound				Dillingham Boulevard Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
07:15 AM	17	100	30	3	147	10	135	12	12	157	3	61	5	69	63	335	27	425	798	
07:30 AM	11	113	36	36	160	17	132	18	8	167	5	54	8	67	50	318	21	389	783	
07:45 AM	31	95	42	42	168	10	117	13	6	140	7	64	6	77	52	320	26	398	783	
08:00 AM	28	118	31	31	177	16	135	12	12	163	0	47	11	58	39	306	14	359	757	
Total Volume	87	426	139	139	652	53	519	55	30	627	15	226	30	271	204	1279	88	1571	3121	
% App. Total	13.3	65.3	21.3	21.3	21.8	8.5	82.8	8.8	11.1	21.8	5.5	83.4	11.1	8.5	13	81.4	5.6	9.24	.978	
PHF	.702	.903	.827	.827	.921	.779	.961	.764	.939	.939	.536	.883	.682	.880	.810	.954	.815	.924	.978	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, CM  
Counter: D4-5672, TU-0650  
Weather: Clear

File Name : DiWai PM  
Site Code : 00000002  
Start Date : 1/17/2013  
Page No : 1

Start Time	Groups Printed- Unshifted												Int. Total																													
	Waiakamilo Road Southbound				Dillingham Boulevard Westbound				Waiakamilo Road Northbound					Dillingham Boulevard Eastbound																												
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		Left	Thru	Right	Peds																									
03:00 PM	29	101	30	14	21	219	34	0	7	95	33	4	31	163	19	12	31	174	14	17	174	14	30	14	21	219	34	0	274	0	274	0	260	4	122	33	3	162	190	14	12	246
03:15 PM	17	85	33	12	23	230	34	1	10	80	18	8	8	116	30	20	22	175	30	20	24	189	21	18	247	798																
03:30 PM	23	105	49	16	28	242	55	0	9	97	22	2	2	130	24	18	24	189	21	18	252	900																				
03:45 PM	27	89	35	11	35	213	39	1	4	110	33	11	46	219	24	20	309	917																								
Total	96	380	147	53	107	904	162	2	30	382	106	25	123	746	94	70	1033	3427																								
04:00 PM	24	111	36	20	25	200	35	0	4	122	33	3	30	190	14	12	246	859																								
04:15 PM	24	81	34	3	29	199	29	0	6	105	20	3	25	233	13	22	293	826																								
04:30 PM	21	73	24	23	25	246	51	0	7	129	20	10	20	203	18	17	258	887																								
04:45 PM	21	65	38	12	34	228	45	0	7	111	14	1	22	212	7	17	258	834																								
Total	90	330	132	58	113	873	160	0	24	467	87	17	97	838	52	68	1055	3406																								
05:00 PM	22	65	35	28	17	244	34	0	3	115	21	1	18	173	11	12	214	799																								
05:15 PM	18	78	23	22	31	233	41	0	2	52	18	6	55	170	9	12	246	770																								
05:30 PM	26	68	37	19	22	214	44	0	10	85	21	2	25	167	11	9	212	760																								
05:45 PM	24	41	26	14	31	195	46	1	4	88	11	1	28	166	8	7	209	691																								
Total	90	252	121	83	101	886	165	1	19	340	71	10	126	676	39	40	881	3020																								
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																								
Grand Total	276	962	400	194	321	2663	487	3	73	1189	264	52	346	2260	185	178	2969	9853																								
Approch %	15.1	52.5	21.8	10.6	9.2	76.7	14	0.1	4.6	75.3	16.7	3.3	11.7	76.1	6.2	6	30.1	9853																								
Total %	2.8	9.8	4.1	2	3.3	27	4.9	0	0.7	12.1	2.7	0.5	3.5	22.9	1.9	1.8	16	30.1																								

Start Time	Waiakamilo Road Southbound												Int. Total	
	Dillingham Boulevard Westbound				Waiakamilo Road Northbound				Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
03:30 PM	23	105	49	177	9	97	22	128	24	189	21	234	864	
03:45 PM	27	89	35	151	4	110	33	147	46	219	24	289	874	
04:00 PM	24	111	36	171	4	122	33	159	30	190	14	234	824	
04:15 PM	24	81	34	139	6	105	20	131	25	233	13	271	798	
Total Volume	98	386	154	638	23	434	108	565	125	831	72	1028	3360	
% App. Total	15.4	60.5	24.1	.901	4.1	76.8	19.1	.888	12.2	80.8	7	.889	.750	.961
PHF	.907	.869	.786		.639	.889	.818		.679	.892	.750			

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By:GC, PA  
Counter:D4-5675, TU-0653  
Weather:Clear

File Name : DiKoh AM  
Site Code : 00000001  
Start Date : 1/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kohou Street Southbound				Dillingham Boulevard Westbound				Kohou Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
06:00 AM	1	2	9	2	14	4	61	5	0	70	2	4	8	2	16	8	129	1	5	143	243
06:15 AM	2	6	8	3	19	5	60	9	0	74	1	3	11	3	18	14	170	1	10	195	306
06:30 AM	4	7	9	2	22	11	84	6	0	101	2	2	21	7	32	8	228	2	14	252	407
06:45 AM	8	12	8	1	29	13	77	18	1	109	3	9	17	5	34	17	278	6	10	311	483
Total	15	27	34	8	84	33	282	38	1	354	8	18	57	17	100	47	805	10	39	901	1439
07:00 AM	10	7	15	2	34	21	91	23	0	135	3	0	25	3	31	10	343	3	8	364	564
07:15 AM	9	12	8	12	41	16	113	16	0	145	3	9	24	6	42	11	336	7	20	374	602
07:30 AM	8	20	11	9	48	17	125	10	0	152	0	8	14	4	26	8	335	12	13	368	594
07:45 AM	10	29	9	0	48	17	131	8	0	156	3	10	19	3	35	32	294	10	10	346	585
Total	37	68	43	23	171	71	460	57	0	588	9	27	82	16	134	61	1308	32	51	1452	2345
08:00 AM	8	22	18	11	59	27	110	16	0	153	12	16	28	10	66	11	279	16	12	318	596
08:15 AM	9	26	13	8	56	23	127	20	0	170	13	19	24	3	59	10	292	12	14	328	613
08:30 AM	13	21	14	5	53	17	116	11	1	145	15	14	18	3	50	9	220	16	11	256	504
08:45 AM	15	21	15	3	54	20	115	11	0	146	13	9	26	4	52	5	191	17	14	227	479
Total	45	90	60	27	222	87	468	58	1	614	53	58	96	20	227	35	982	61	51	1129	2192
Grand Total	97	185	137	58	477	191	1210	153	2	1556	70	103	235	53	461	143	3095	103	141	3482	5976
Approach %	20.3	38.8	28.7	12.2		12.3	77.8	9.8	0.1		15.2	22.3	51	11.5		4.1	88.9	3	4		
Total %	1.6	3.1	2.3	1	8	3.2	20.2	2.6	0	26	1.2	1.7	3.9	0.9	7.7	2.4	51.8	1.7	2.4	58.3	

Start Time	Kohou Street Southbound				Dillingham Boulevard Westbound				Kohou Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	8	20	11		39	17	125	10		152	0	8	14		22	8	335	12		355	568
07:45 AM	10	29	9		48	17	131	8		156	3	10	19		32	32	294	10		336	572
08:00 AM	8	22	18		48	27	110	16		153	12	16	28		56	11	279	16		306	563
08:15 AM	9	26	13		48	23	127	20		170	13	19	24		56	10	292	12		314	588
Total Volume	35	97	51		183	84	493	54		631	28	53	85		166	61	1200	50		1311	2291
% App. Total	19.1	53	27.9		.953	13.3	78.1	8.6		.928	16.9	31.9	51.2		.741	4.7	91.5	3.8		.923	.974
PHF	.875	.836	.708			.778	.941	.675			.538	.697	.759			.477	.896	.781			

**Wilson Okamoto Corporation**  
 1907 S. Beretania Street, Suite 400  
 Honolulu, Hawaii

Counted By: PA, TO  
 Counter: D4-5675, TU-0653  
 Weather: Clear

File Name : DiKoh PM  
 Site Code : 00000001  
 Start Date : 1/22/2013  
 Page No : 1

Groups Printed- Unshifted

Start Time	Kohou Street Southbound			Dillingham Boulevard Westbound			Kohou Street Northbound			Dillingham Boulevard Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	
03:00 PM	28	33	17	30	196	24	16	22	36	74	16	240	13	269	671
03:15 PM	16	32	9	28	242	24	16	24	18	58	23	253	11	287	696
03:30 PM	22	22	29	23	241	30	19	32	47	98	7	256	9	272	737
03:45 PM	18	16	17	22	238	40	10	36	19	65	17	304	13	334	750
Total	84	103	72	103	917	118	61	114	120	295	63	1053	46	1162	2854
04:00 PM	18	19	18	19	220	27	9	25	37	71	13	239	9	261	653
04:15 PM	15	22	23	21	244	15	10	21	32	63	14	289	8	311	714
04:30 PM	20	19	15	22	224	27	6	37	25	68	16	266	9	291	686
04:45 PM	13	13	8	15	292	20	11	29	19	59	20	273	10	303	723
Total	66	73	64	77	980	89	36	112	113	261	63	1067	36	1166	2776
05:00 PM	16	26	15	23	232	24	11	30	11	52	21	250	12	283	671
05:15 PM	10	15	11	19	239	21	3	17	15	35	13	228	10	251	601
05:30 PM	21	13	11	12	208	16	15	19	8	42	10	211	7	228	551
05:45 PM	18	11	18	17	214	16	3	12	12	27	14	177	9	200	521
Total	65	65	55	71	893	77	32	78	46	156	58	866	38	962	2344
Grand Total	215	241	191	251	2790	284	129	304	279	712	184	2986	120	3290	7974
Approch %	33.2	37.2	29.5	7.5	83.9	8.5	18.1	42.7	39.2	8.9	5.6	90.8	3.6	41.3	
Total %	2.7	3	2.4	3.1	35	3.6	1.6	3.8	3.5		2.3	37.4	1.5		

Start Time	Kohou Street Southbound			Dillingham Boulevard Westbound			Kohou Street Northbound			Dillingham Boulevard Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	
03:00 PM	28	33	17	30	196	24	16	22	36	74	16	240	13	269	671
03:15 PM	16	32	9	28	242	24	16	24	18	58	23	253	11	287	696
03:30 PM	22	22	29	23	241	30	19	32	47	98	7	256	9	272	737
03:45 PM	18	16	17	22	238	40	10	36	19	65	17	304	13	334	750
Total	84	103	72	103	917	118	61	114	120	295	63	1053	46	1162	2854
04:00 PM	18	19	18	19	220	27	9	25	37	71	13	239	9	261	653
04:15 PM	15	22	23	21	244	15	10	21	32	63	14	289	8	311	714
04:30 PM	20	19	15	22	224	27	6	37	25	68	16	266	9	291	686
04:45 PM	13	13	8	15	292	20	11	29	19	59	20	273	10	303	723
Total	66	73	64	77	980	89	36	112	113	261	63	1067	36	1166	2776
05:00 PM	16	26	15	23	232	24	11	30	11	52	21	250	12	283	671
05:15 PM	10	15	11	19	239	21	3	17	15	35	13	228	10	251	601
05:30 PM	21	13	11	12	208	16	15	19	8	42	10	211	7	228	551
05:45 PM	18	11	18	17	214	16	3	12	12	27	14	177	9	200	521
Total	65	65	55	71	893	77	32	78	46	156	58	866	38	962	2344
Grand Total	215	241	191	251	2790	284	129	304	279	712	184	2986	120	3290	7974
Approch %	33.2	37.2	29.5	7.5	83.9	8.5	18.1	42.7	39.2	8.9	5.6	90.8	3.6	41.3	
Total %	2.7	3	2.4	3.1	35	3.6	1.6	3.8	3.5		2.3	37.4	1.5		

Start Time	Kohou Street Southbound			Dillingham Boulevard Westbound			Kohou Street Northbound			Dillingham Boulevard Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	
03:00 PM	28	33	17	30	196	24	16	22	36	74	16	240	13	269	671
03:15 PM	16	32	9	28	242	24	16	24	18	58	23	253	11	287	696
03:30 PM	22	22	29	23	241	30	19	32	47	98	7	256	9	272	737
03:45 PM	18	16	17	22	238	40	10	36	19	65	17	304	13	334	750
Total	84	103	72	103	917	118	61	114	120	295	63	1053	46	1162	2854
% App. Total	32.4	39.8	27.8	9.1	80.6	10.4	20.7	38.6	40.7	295	5.4	90.6	4	1162	2854
PHF	.750	.780	.621	.830	.947	.738	.803	.792	.638	.753	.685	.866	.885	.870	.951

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 03:00 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, YS  
Counter: TU-0652, D4-5674  
Weather: Clear

File Name : DiIKok AM  
Site Code : 00000002  
Start Date : 1/22/2013  
Page No : 1

Groups Printed - Unshifted

Start Time	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
06:00 AM	14	6	4	4	28	2	63	13	3	81	1	0	0	0	1	10	85	4	0	99	209
06:15 AM	32	5	3	5	45	6	75	9	4	94	0	0	1	2	3	17	163	10	0	190	332
06:30 AM	28	16	4	8	56	11	95	11	6	123	5	3	2	9	19	31	210	9	0	250	448
06:45 AM	28	17	3	5	53	6	104	24	9	143	3	0	0	4	7	34	254	14	0	302	505
Total	102	44	14	22	182	25	337	57	22	441	9	3	3	15	30	92	712	37	0	841	1494
07:00 AM	23	4	8	1	36	2	128	11	9	150	2	0	3	6	11	35	293	9	0	337	534
07:15 AM	34	1	5	12	52	2	139	21	6	168	6	0	3	6	15	34	302	6	0	342	577
07:30 AM	24	0	5	10	39	5	147	22	6	180	4	4	1	5	14	29	325	4	1	359	592
07:45 AM	34	3	4	6	47	0	155	35	7	197	9	0	2	5	16	39	267	9	0	315	575
Total	115	8	22	29	174	9	569	89	28	695	21	4	9	22	56	137	1187	28	1	1353	2278
08:00 AM	27	8	9	11	55	3	161	36	19	219	7	5	2	8	22	56	260	6	0	322	618
08:15 AM	35	4	19	16	74	2	162	37	9	210	3	0	1	6	10	59	262	7	0	328	622
08:30 AM	29	7	14	8	58	5	141	36	8	190	5	1	3	7	16	23	216	5	0	244	508
08:45 AM	35	6	3	5	49	3	150	28	8	189	3	0	1	6	10	30	201	5	0	236	484
Total	126	25	45	40	236	13	614	137	44	808	18	6	7	27	58	168	939	23	0	1130	2232
Grand Total	343	77	81	91	592	47	1520	283	94	1944	48	13	19	64	144	397	2838	88	1	3324	6004
Approach %	57.9	13	13.7	15.4	9.9	2.4	78.2	14.6	4.8	32.4	33.3	0.2	13.2	44.4	2.4	11.9	85.4	2.6	0	55.4	
Total %	5.7	1.3	1.3	1.5	9.9	0.8	25.3	4.7	1.6	32.4	0.8	0.2	0.3	1.1	2.4	6.6	47.3	1.5	0	55.4	

Start Time	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
07:30 AM	24	0	5	5	29	5	147	22	22	174	4	4	1	1	9	29	325	4	0	358	570
07:45 AM	34	3	4	4	41	0	155	35	35	190	9	0	2	2	11	39	267	9	0	315	557
08:00 AM	27	8	9	9	44	3	161	36	36	200	7	5	2	2	14	56	260	6	0	322	580
08:15 AM	35	4	19	19	58	2	162	37	37	201	3	0	1	1	4	59	262	7	0	328	591
Total Volume	120	15	37	37	172	10	625	130	130	765	23	9	6	6	38	183	1114	26	0	1323	2298
% App. Total	69.8	8.7	21.5	21.5	.741	1.3	81.7	17	17	60.5	60.5	23.7	15.8	15.8	.679	13.8	84.2	2	0	.924	
PHF	.857	.469	.487	.487	.741	.500	.965	.878	.878	.951	.639	.450	.750	.750	.679	.775	.857	.722	0	.924	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:30 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, CY  
Counter: TU-0652, D4-5674  
Weather: Clear

File Name : DiIKok PM  
Site Code : 00000002  
Start Date : 1/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
	03:00 PM	34	1	21	16	72	2	238	36	5	281	7	11	3	5	26		20	276	3	0
03:15 PM	26	6	18	4	54	2	254	42	8	306	16	16	3	3	38	19	281	2	0	302	700
03:30 PM	35	0	16	5	56	2	285	44	11	342	4	7	3	6	20	42	299	8	0	349	767
03:45 PM	35	6	32	6	79	4	251	38	4	297	7	9	7	6	29	52	276	8	0	336	741
Total	130	13	87	31	261	10	1028	160	28	1226	34	43	16	20	113	133	1132	21	0	1286	2886
04:00 PM	37	1	16	8	62	5	268	43	17	333	12	8	3	4	27	36	295	5	3	339	761
04:15 PM	25	4	22	3	54	3	260	38	8	309	5	4	6	6	21	46	275	3	0	324	708
04:30 PM	20	2	7	11	40	5	277	36	9	326	10	10	3	4	27	41	291	7	0	339	732
04:45 PM	29	3	14	5	51	2	299	36	8	346	14	8	6	6	34	34	265	7	0	306	737
Total	111	10	59	27	207	15	1104	153	42	1314	41	30	18	20	109	157	1126	22	3	1308	2938
05:00 PM	22	1	17	7	47	5	273	50	4	332	9	5	1	14	29	34	270	9	0	313	721
05:15 PM	31	4	11	4	50	3	267	37	13	320	13	6	2	3	24	27	227	6	0	260	654
05:30 PM	20	3	5	14	42	3	236	43	10	292	2	3	1	1	7	22	267	3	0	292	633
05:45 PM	25	4	6	6	41	0	230	30	4	264	14	8	3	8	33	12	199	5	0	216	554
Total	98	12	39	31	180	11	1006	160	31	1208	38	22	7	26	93	95	963	23	0	1081	2562
Grand Total	339	35	185	89	648	36	3138	473	101	3748	113	95	41	66	315	385	3221	66	3	3675	8386
Approch %	52.3	5.4	28.5	13.7	7.7	1	83.7	12.6	2.7	44.7	35.9	30.2	13	21	3.8	10.5	87.6	1.8	0.1	43.8	
Total %	4	0.4	2.2	1.1	7.7	0.4	37.4	5.6	1.2	44.7	1.3	1.1	0.5	0.8	3.8	4.6	38.4	0.8	0	43.8	

Start Time	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
	03:30 PM	35	0	16	16	51	2	285	44	4	331	4	7	3	3	14		42	299	8	8
03:45 PM	35	6	32	6	73	4	251	38	38	293	7	9	7	7	23	52	276	8	8	336	725
04:00 PM	37	1	16	5	54	5	268	43	43	316	12	8	3	3	23	36	295	5	5	336	729
04:15 PM	25	4	22	6	51	3	260	38	38	301	5	4	6	6	15	46	275	3	3	324	691
Total Volume	132	11	86	37	229	14	1064	163	1241	1241	28	28	19	75	75	176	1145	24	24	1345	2890
% App. Total	57.6	4.8	37.6	16.6	78.4	1.1	85.7	13.1	9.7	93.7	37.3	37.3	25.3	31.7	31.7	13.1	85.1	1.8	1.8	134.5	2890
PHF	.892	.458	.672	.672	.784	.700	.933	.926	.937	.937	.583	.778	.679	.815	.815	.846	.957	.750	.963	.963	.970

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: DS, RF  
Counter: D4-5676, D4-5677  
Weather: Clear

File Name : DiAla AM  
Site Code : 00000003  
Start Date : 1/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						Alakawa Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	06:00 AM	0	0	0	0	0	34	41	0	12	87	32	0	20	0	47	0	60	0	74	0	121	0	268
06:15 AM	0	0	0	0	0	48	73	1	7	129	29	0	34	0	84	0	68	0	113	0	197	0	394	
06:30 AM	1	0	0	0	1	47	82	1	10	140	33	0	29	0	76	0	77	1	152	0	229	0	447	
06:45 AM	0	0	1	0	1	42	95	1	11	149	47	0	42	0	89	0	94	3	209	0	301	0	545	
Total	1	0	1	0	2	171	291	3	40	505	141	0	125	0	296	0	299	4	548	0	848	0	1654	
07:00 AM	0	0	0	0	0	40	109	0	14	163	44	0	44	0	84	0	91	1	235	0	320	0	574	
07:15 AM	0	0	0	0	0	41	112	8	16	177	51	0	54	0	101	0	111	8	280	0	389	0	677	
07:30 AM	0	0	1	0	1	51	118	2	9	180	54	0	30	0	102	0	87	1	243	0	346	0	614	
07:45 AM	0	0	1	0	1	72	128	3	3	206	60	0	31	0	105	0	97	5	226	0	336	0	640	
Total	0	0	2	0	2	204	467	13	42	726	209	0	159	0	392	0	386	15	984	0	1391	0	2505	
08:00 AM	0	0	0	0	0	66	153	0	2	221	59	0	48	0	103	0	113	5	197	0	305	0	639	
08:15 AM	0	0	0	0	0	80	155	3	8	246	58	0	52	0	106	0	116	2	192	0	300	0	662	
08:30 AM	0	0	0	0	0	72	116	2	3	193	63	0	58	0	85	0	124	6	185	0	276	0	593	
08:45 AM	0	0	0	0	0	77	116	5	10	208	69	0	55	0	96	1	131	4	136	0	237	0	576	
Total	0	0	0	0	0	295	540	10	23	868	249	0	213	0	390	1	484	17	710	0	1118	0	2470	
Grand Total	1	0	3	0	4	670	1298	26	105	2099	599	0	497	0	1078	1	1169	36	2242	0	3357	0	6629	
Approch %	25	0	75	0	0.1	31.9	61.8	1.2	5	31.7	51.2	0	42.5	0	32.1	0	17.6	1.1	66.8	0	50.6	0		
Total %	0	0	0	0	0	10.1	19.6	0.4	1.6	31.7	9	0	7.5	0	16.3	0	17.6	0.5	33.8	0	50.6	0		

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						Alakawa Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	07:15 AM	0	0	0	0	0	41	112	8	8	161	51	0	54	0	101	0	105	8	280	0	389	0	655
07:30 AM	0	0	1	0	1	51	118	2	2	171	54	0	30	0	102	0	84	1	243	0	346	0	602	
07:45 AM	0	0	1	0	1	72	128	3	3	203	60	0	31	0	105	0	91	5	226	0	336	0	631	
08:00 AM	0	0	0	0	0	66	153	0	0	219	59	0	48	0	103	0	107	5	197	0	305	0	631	
Total Volume	0	0	2	0	2	230	511	13	13	754	224	0	163	0	411	0	387	19	946	0	1376	0	2519	
% App. Total	0	0	0	0	0	30.5	67.8	1.7	1.7	31.7	57.9	0	42.1	0	29.9	0	17.6	1.4	68.8	0	50.6	0		
PHF	.000	.000	.000	.500	.500	.799	.835	.406	.406	.861	.933	.000	.755	.000	.979	.000	.904	.594	.845	0	.884	0	.961	

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RF, DS  
Counter: D4-5676, D4-5677  
Weather: Clear

File Name : DilAla PM  
Site Code : 00000003  
Start Date : 1/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						Alakawa Street Northbound						Dillingham Boulevard Eastbound						
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		
03:00 PM	1	0	0	0	1		45	159	0	20	224		118	4	75	7	204		4	227	98	3	332		761
03:15 PM	0	0	0	0	0		73	189	7	19	288		107	2	77	4	190		8	197	71	4	280		758
03:30 PM	0	0	0	0	0		63	201	2	16	282		110	3	69	5	187		0	223	80	0	303		772
03:45 PM	0	0	0	0	0		57	192	4	7	260		138	4	86	3	231		5	211	86	0	302		793
Total	1	0	0	0	1		238	741	13	62	1054		473	13	307	19	812		17	858	335	7	1217		3084
04:00 PM	0	0	0	0	0		53	207	14	18	292		116	1	85	7	209		6	227	104	11	348		849
04:15 PM	0	0	1	0	1		55	173	2	12	242		125	1	73	8	207		2	225	91	0	318		768
04:30 PM	0	0	0	0	0		45	197	2	14	258		118	0	69	5	192		5	261	99	0	365		815
04:45 PM	0	0	1	0	1		59	190	0	7	256		160	0	86	11	257		1	186	94	0	281		795
Total	0	0	2	0	2		212	767	18	51	1048		519	2	313	31	865		14	899	388	11	1312		3227
05:00 PM	0	0	0	0	0		51	182	1	11	245		119	1	75	2	197		0	218	86	0	304		746
05:15 PM	0	0	0	0	0		54	179	1	2	236		114	0	100	9	223		0	204	88	2	294		753
05:30 PM	0	0	0	0	0		61	154	2	9	226		128	0	73	16	217		0	228	86	0	314		757
05:45 PM	0	0	0	0	0		53	148	0	5	206		112	3	61	7	183		1	163	63	0	227		616
Total	0	0	0	0	0		219	663	4	27	913		473	4	309	34	820		1	813	323	2	1139		2872
Grand Total	1	0	2	0	3		669	2171	35	140	3015		1465	19	929	84	2497		32	2570	1046	20	3668		9183
Approch % Total %	33.3	0	66.7	0	0		22.2	72	1.2	4.6	32.8		58.7	0.8	37.2	3.4	27.2		0.9	70.1	28.5	0.5	39.9		
	0	0	0	0	0		7.3	23.6	0.4	1.5			16	0.2	10.1	0.9			0.3	28	11.4	0.2			

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						Alakawa Street Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
03:45 PM	0	0	0	0	0		57	192	4	253		138	4	86	5	228		5	211	86	302		783	
04:00 PM	0	0	0	0	0		53	207	14	274		116	1	85	6	202		6	227	104	337		813	
04:15 PM	0	0	1	1	2		55	173	2	230		125	1	73	2	199		2	225	91	748		748	
04:30 PM	0	0	0	0	0		45	197	2	244		118	0	69	5	187		5	261	99	365		796	
Total Volume	0	0	1	1	2		210	769	22	1001		497	6	313	18	816		18	924	380	1322		3140	
% App. Total PHF	.000	.000	.250	.250	.250		.921	.929	.393	.913		.900	.375	.910	.895	.895		1.4	69.9	28.7	.905	.966		

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:45 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Counted By:KL, MD  
Counter:D4-3890, D4-3889  
Weather:Clear

File Name : DilCostDwy AM  
Site Code : 00000004  
Start Date : 1/22/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Honolulu Community College Driveway Southbound				Dillingham Boulevard Westbound				Costco Driveway Northbound				Dillingham Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	0	0	0	0	2	96	1	0	99	0	0	2	2	4	0	94	10	0	104	207
06:15 AM	0	0	0	0	116	5	116	3	1	125	2	0	4	0	6	1	141	4	0	146	277
06:30 AM	0	0	1	0	142	2	132	3	5	148	1	0	5	3	9	0	194	3	0	197	349
06:45 AM	1	0	0	0	135	7	135	4	2	148	1	0	1	1	3	0	244	4	0	248	400
Total	1	0	1	0	2	16	479	11	8	514	4	0	12	6	22	1	673	21	0	695	1233
07:00 AM	0	0	0	0	0	6	139	3	2	150	3	0	1	0	4	0	299	2	0	301	455
07:15 AM	0	0	2	0	158	15	158	10	10	193	3	0	8	2	13	0	314	3	0	317	525
07:30 AM	0	0	0	0	172	11	172	9	7	199	4	0	6	7	17	0	281	14	0	295	511
07:45 AM	1	0	1	0	212	23	212	2	7	244	3	0	2	1	6	0	245	12	0	257	509
Total	1	0	3	0	4	55	681	24	26	786	13	0	17	10	40	0	1139	31	0	1170	2000
08:00 AM	0	0	1	0	0	10	213	13	3	239	2	0	6	1	9	0	253	7	0	260	509
08:15 AM	1	0	2	0	227	18	227	12	8	265	2	0	7	5	14	0	212	7	0	219	501
08:30 AM	0	0	1	0	178	29	178	4	6	217	1	0	7	3	11	0	246	7	0	253	482
08:45 AM	0	0	2	0	185	18	185	4	2	209	1	0	7	0	8	0	202	11	0	213	432
Total	1	0	6	0	7	75	803	33	19	930	6	0	27	9	42	0	913	32	0	945	1924
Grand Total	3	0	10	0	13	146	1963	68	53	2230	23	0	56	25	104	1	2725	84	0	2810	5157
Apprch %	23.1	0	76.9	0	0	6.5	88	3	2.4	22.1	0	0	53.8	24	0	0	97	3	0	0	0
Total %	0.1	0	0.2	0	0.3	2.8	38.1	1.3	1	43.2	0.4	0	1.1	0.5	2	0	52.8	1.6	0	54.5	0

Start Time	Honolulu Community College Driveway Southbound				Dillingham Boulevard Westbound				Costco Driveway Northbound				Dillingham Boulevard Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:15 AM	0	0	2	0	2	15	158	10	8	183	3	0	8	11	0	314	3	0	317	513	
07:30 AM	0	0	0	0	192	11	172	9	6	192	4	0	6	10	0	281	14	0	295	497	
07:45 AM	1	0	1	0	237	23	212	2	2	237	3	0	2	5	0	245	12	0	257	501	
08:00 AM	0	0	1	0	236	10	213	13	6	236	2	0	6	8	0	253	7	0	260	505	
Total Volume	1	0	4	0	848	59	755	34	22	848	12	0	22	34	0	1093	36	0	1129	2016	
% App. Total	20	0	80	0	35.3	7	89	4	64.7	35.3	0	0	96.8	3.2	0	96.8	3.2	0	96.8	3.2	
PHF	.250	.000	.500	.625	.895	.641	.886	.654	.688	.773	.750	.000	.688	.773	.000	.870	.643	.643	.643	.890	.982

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: JL, MD  
Counter: D4-3890, D4-3889  
Weather: Clear

File Name : DilCostDwy PM  
Site Code : 00000004  
Start Date : 1/22/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						COSTCO Driveway Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	03:00 PM	0	0	10	0	10		72	180	4	4	260		24	0	73	6	103		0	273	34	0	307
03:15 PM	1	0	21	0	22		61	210	7	4	282		26	0	58	7	91		0	292	24	0	316	
03:30 PM	0	0	17	0	17		58	246	3	10	317		16	0	93	6	115		35	227	22	0	284	
03:45 PM	0	0	8	0	8		64	210	4	8	286		19	0	78	4	101		0	279	20	0	299	
<b>Total</b>	<b>1</b>	<b>0</b>	<b>56</b>	<b>0</b>	<b>57</b>		<b>255</b>	<b>846</b>	<b>18</b>	<b>26</b>	<b>1145</b>		<b>85</b>	<b>0</b>	<b>302</b>	<b>23</b>	<b>410</b>		<b>35</b>	<b>1071</b>	<b>100</b>	<b>0</b>	<b>1206</b>	
04:00 PM	0	0	3	0	3		51	251	1	8	311		14	0	59	7	80		0	273	34	0	307	
04:15 PM	1	0	2	0	3		51	201	3	11	266		12	0	63	5	80		0	312	25	0	337	
04:30 PM	0	0	4	0	4		57	213	2	11	283		19	0	74	5	98		0	268	21	0	289	
04:45 PM	0	0	5	0	5		47	209	2	6	264		19	0	58	2	79		0	258	24	0	282	
<b>Total</b>	<b>1</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>15</b>		<b>206</b>	<b>874</b>	<b>8</b>	<b>36</b>	<b>1124</b>		<b>64</b>	<b>0</b>	<b>254</b>	<b>19</b>	<b>337</b>		<b>0</b>	<b>1111</b>	<b>104</b>	<b>0</b>	<b>1215</b>	
05:00 PM	0	0	0	0	0		59	218	0	14	291		11	0	69	1	81		0	251	16	0	267	
05:15 PM	0	0	1	0	1		64	206	1	11	282		17	0	41	6	64		0	284	46	3	333	
05:30 PM	1	0	1	0	2		51	194	1	4	250		12	0	70	10	92		0	280	29	0	309	
05:45 PM	0	0	3	0	3		58	188	2	10	258		9	0	89	2	100		0	231	13	0	244	
<b>Total</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6</b>		<b>232</b>	<b>806</b>	<b>4</b>	<b>39</b>	<b>1081</b>		<b>49</b>	<b>0</b>	<b>269</b>	<b>19</b>	<b>337</b>		<b>0</b>	<b>1046</b>	<b>104</b>	<b>3</b>	<b>1153</b>	
<b>Grand Total</b>	<b>3</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>78</b>		<b>693</b>	<b>2526</b>	<b>30</b>	<b>101</b>	<b>3350</b>		<b>198</b>	<b>0</b>	<b>825</b>	<b>61</b>	<b>1084</b>		<b>35</b>	<b>3228</b>	<b>308</b>	<b>3</b>	<b>3574</b>	
Apprch %	3.8	0	96.2	0	1		20.7	75.4	0.9	3	41.4		18.3	0	76.1	5.6	13.4		1	90.3	8.6	0.1	44.2	
Total %	0	0	0.9	0	1		8.6	31.2	0.4	1.2	13.4		2.4	0	10.2	0.8	13.4		0.4	39.9	3.8	0	44.2	

Start Time	Honolulu Community College Driveway Southbound						Dillingham Boulevard Westbound						COSTCO Driveway Northbound						Dillingham Boulevard Eastbound					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	
	03:15 PM	1	0	0	21	22		61	210	7	7	278		26	0	58	58	84		0	292	24	0	316
03:30 PM	0	0	0	17	17		58	246	3	3	307		16	0	93	93	109		35	227	22	0	284	
03:45 PM	0	0	0	8	8		64	210	4	4	278		19	0	78	78	97		0	279	20	0	299	
04:00 PM	0	0	0	3	3		51	251	1	1	303		14	0	59	59	73		0	273	34	0	307	
Total Volume	1	0	0	49	50		234	917	15	15	1166		75	0	288	288	363		35	1071	100	0	1206	
% App. Total	2	0	0	98	.568		20.1	78.6	1.3	1.3	950		20.7	0	79.3	79.3	8.3		2.9	88.8	8.3	0	.954	
PHF	.250	.000	.583				.914	.913	.536	.774	.833		.721	.000	.774	.774	.833		.250	.917	.735	0	.971	

Start Time  
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 03:15 PM



# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: PA  
Counter: TU-0651  
Weather: Clear

File Name : DilAke AM  
Site Code : 00000001  
Start Date : 1/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Akepo Lane Southbound				Westbound				Costco Parking Lot Northbound				Dillingham Boulevard Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total	
06:00 AM	7	0	12	0	19	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	20
06:15 AM	2	0	18	0	20	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	23
06:30 AM	5	0	10	0	15	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	0	18
06:45 AM	6	0	14	0	20	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	21
<b>Total</b>	<b>20</b>	<b>0</b>	<b>54</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>82</b>
07:00 AM	6	0	16	0	22	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	24
07:15 AM	5	0	14	0	19	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	20
07:30 AM	3	0	14	0	17	0	0	4	0	4	0	0	1	0	1	0	0	1	0	1	0	22
07:45 AM	1	0	26	0	27	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	30
<b>Total</b>	<b>15</b>	<b>0</b>	<b>70</b>	<b>0</b>	<b>85</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>96</b>
08:00 AM	2	0	29	0	31	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	34
08:15 AM	3	0	20	0	23	0	0	3	0	3	0	0	2	0	2	0	0	2	0	2	0	28
08:30 AM	4	0	16	0	20	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	25
08:45 AM	3	0	23	0	26	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	30
<b>Total</b>	<b>12</b>	<b>0</b>	<b>88</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>117</b>
<b>Grand Total</b>	<b>47</b>	<b>0</b>	<b>212</b>	<b>0</b>	<b>259</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>295</b>
Approch %	18.1	0	81.9	0		0	0	100	0		0	0	100	0		0	0	100	0		0	
Total %	15.9	0	71.9	0	87.8	0	0	10.5	0	10.5	0	0	1.7	0	1.7	0	0	1.7	0	0	0	1.7

Start Time	Akepo Lane Southbound				Westbound				Costco Parking Lot Northbound				Dillingham Boulevard Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total	
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 07:45 AM																						
07:45 AM	1	0	26	0	27	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	30
08:00 AM	2	0	29	0	31	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	34
08:15 AM	3	0	20	0	23	0	0	0	3	3	0	0	0	0	0	0	0	2	0	2	0	28
08:30 AM	4	0	16	0	20	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	25
Total Volume	10	0	91	0	101	0	0	0	14	14	0	0	0	0	0	0	0	2	0	2	0	117
% App. Total	9.9	0	90.1	0		0	0	0	100	100	0	0	100	0	100	0	0	100	0	0	0	117
PHF	.625	.000	.784	.000	.815	.000	.000	.700	.000	.700	.000	.000	.250	.000	.250	.000	.000	.250	.000	.250	.000	.860

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: PA  
Counter: TU-0651  
Weather: Clear

File Name : DiIAke PM  
Site Code : 00000001  
Start Date : 1/24/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Akepo Lane Southbound				Westbound				Costco Parking Lot Northbound				Dillingham Boulevard Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total	
03:00 PM	5	0	21	0	26	0	0	18	0	18	0	0	1	0	1	0	0	0	0	0	1	45
03:15 PM	1	0	22	0	23	0	0	17	0	17	0	0	0	0	0	0	0	0	0	0	0	40
03:30 PM	2	0	17	0	19	0	0	8	0	8	0	0	1	0	1	0	0	0	0	0	1	28
03:45 PM	1	0	23	0	24	0	0	14	0	14	0	0	1	0	1	0	0	0	0	0	1	39
Total	9	0	83	0	92	0	0	57	0	57	0	0	3	0	3	0	0	0	0	0	3	152
04:00 PM	1	0	21	0	22	0	0	14	0	14	0	0	0	0	0	0	0	0	0	0	0	36
04:15 PM	2	0	10	0	12	0	0	12	0	12	0	0	1	0	1	0	0	0	0	0	1	25
04:30 PM	2	0	22	0	24	0	1	12	0	13	0	0	0	0	0	0	0	0	0	0	0	37
04:45 PM	1	0	20	0	21	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	33
Total	6	0	73	0	79	0	1	50	0	51	0	0	1	0	1	0	0	0	0	0	1	131
05:00 PM	5	0	21	0	26	0	0	10	0	10	0	0	2	0	2	0	0	0	0	0	2	38
05:15 PM	4	0	25	0	29	0	0	9	0	9	0	0	3	0	3	0	0	0	0	0	3	41
05:30 PM	4	0	21	0	25	0	0	16	0	16	0	0	1	0	1	0	0	0	0	0	1	42
05:45 PM	3	0	17	0	20	0	0	18	0	18	0	0	0	0	0	0	0	0	0	0	0	38
Total	16	0	84	0	100	0	0	53	0	53	0	0	6	0	6	0	0	0	0	0	6	159
Grand Total	31	0	240	0	271	0	1	160	0	161	0	0	10	0	10	0	0	0	0	0	10	442
Approch %	11.4	0	88.6	0		0.6	0	99.4	0		0	0	100	0		0	0	0	0			
Total %	7	0	54.3	0	61.3	0	0.2	36.2	0	36.4	0	0	2.3	0	2.3	0	0	0	0	0	2.3	

Start Time	Akepo Lane Southbound				Westbound				Costco Parking Lot Northbound				Dillingham Boulevard Eastbound									
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total	
05:00 PM	5	0	21	0	26	0	0	10	0	10	0	0	2	0	2	0	0	0	0	0	2	38
05:15 PM	4	0	25	0	29	0	0	9	0	9	0	0	3	0	3	0	0	0	0	0	3	41
05:30 PM	4	0	21	0	25	0	0	16	0	16	0	0	1	0	1	0	0	0	0	0	1	42
05:45 PM	3	0	17	0	20	0	0	18	0	18	0	0	0	0	0	0	0	0	0	0	0	38
Total Volume	16	0	84	0	100	0	0	53	0	53	0	0	6	0	6	0	0	0	0	0	6	159
% App. Total	16	0	84	0		0	0	100	0		0	0	100	0		0	0	0	0	0		
PHF	.800	.000	.840	.862	.862	.000	.000	.736	.736	.736	.000	.000	.500	.500	.500	.000	.000	.500	.500	.500	.500	.946

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 05:00 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, YS  
Counter: TU-0650, TU-0654  
Weather: Clear

File Name : DiIKaa AM  
Site Code : 00000002  
Start Date : 1/24/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Southbound				Dillingham Boulevard Westbound				Kaaahi Street Northbound				Dillingham Boulevard Eastbound							
	App. Total	Left	Thru	Right	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	8	89	0	0	0	0	0	97	5	0	2	4	11	0	93	9	0	102	210
06:15 AM	0	8	104	0	5	117	0	4	117	0	0	4	7	11	0	136	12	0	148	276
06:30 AM	0	9	113	0	5	127	0	7	127	4	0	7	4	15	0	172	21	0	193	335
06:45 AM	0	9	138	0	4	151	0	5	151	0	0	5	5	10	0	231	5	0	236	397
<b>Total</b>	<b>0</b>	<b>34</b>	<b>444</b>	<b>0</b>	<b>14</b>	<b>492</b>	<b>0</b>	<b>18</b>	<b>492</b>	<b>9</b>	<b>0</b>	<b>18</b>	<b>20</b>	<b>47</b>	<b>0</b>	<b>632</b>	<b>47</b>	<b>0</b>	<b>679</b>	<b>1218</b>
07:00 AM	0	10	121	0	1	132	0	1	132	6	0	1	10	17	0	268	5	0	273	422
07:15 AM	0	21	169	0	5	195	0	3	195	9	0	3	15	27	0	302	13	0	315	537
07:30 AM	0	11	174	0	19	204	0	2	204	2	0	2	14	18	0	275	11	0	286	508
07:45 AM	0	9	184	0	4	197	0	3	197	3	0	3	10	16	0	235	15	0	250	463
<b>Total</b>	<b>0</b>	<b>51</b>	<b>648</b>	<b>0</b>	<b>29</b>	<b>728</b>	<b>0</b>	<b>9</b>	<b>728</b>	<b>20</b>	<b>0</b>	<b>9</b>	<b>49</b>	<b>78</b>	<b>0</b>	<b>1080</b>	<b>44</b>	<b>0</b>	<b>1124</b>	<b>1930</b>
08:00 AM	0	23	172	0	8	203	0	9	203	10	0	9	7	26	0	218	18	0	236	465
08:15 AM	0	14	173	0	6	193	0	12	193	3	0	12	2	17	0	265	15	0	280	490
08:30 AM	0	11	159	0	2	172	0	8	172	5	0	8	6	19	0	233	12	0	245	436
08:45 AM	0	17	182	0	7	206	0	11	206	5	0	11	4	20	0	186	14	1	201	427
<b>Total</b>	<b>0</b>	<b>65</b>	<b>686</b>	<b>0</b>	<b>23</b>	<b>774</b>	<b>0</b>	<b>40</b>	<b>774</b>	<b>23</b>	<b>0</b>	<b>40</b>	<b>19</b>	<b>82</b>	<b>0</b>	<b>902</b>	<b>59</b>	<b>1</b>	<b>962</b>	<b>1818</b>
<b>Grand Total</b>	<b>0</b>	<b>150</b>	<b>1778</b>	<b>0</b>	<b>66</b>	<b>1994</b>	<b>0</b>	<b>67</b>	<b>1994</b>	<b>52</b>	<b>0</b>	<b>67</b>	<b>88</b>	<b>207</b>	<b>0</b>	<b>2614</b>	<b>150</b>	<b>1</b>	<b>2765</b>	<b>4966</b>
<b>Approch %</b>	<b>0</b>	<b>7.5</b>	<b>89.2</b>	<b>0</b>	<b>3.3</b>	<b>40.2</b>	<b>0</b>	<b>32.4</b>	<b>42.5</b>	<b>25.1</b>	<b>0</b>	<b>32.4</b>	<b>42.5</b>	<b>4.2</b>	<b>0</b>	<b>94.5</b>	<b>5.4</b>	<b>0</b>	<b>55.7</b>	<b></b>
<b>Total %</b>	<b>0</b>	<b>3</b>	<b>35.8</b>	<b>0</b>	<b>1.3</b>	<b>40.2</b>	<b>0</b>	<b>1.3</b>	<b>1.8</b>	<b>1</b>	<b>0</b>	<b>1.3</b>	<b>1.8</b>	<b>4.2</b>	<b>0</b>	<b>52.6</b>	<b>3</b>	<b>0</b>	<b></b>	<b></b>

Start Time	Dillingham Boulevard Westbound				Kaaahi Street Northbound				Dillingham Boulevard Eastbound											
	App. Total	Left	Thru	Right	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																				
07:15 AM	0	21	169	0	0	190	0	0	190	9	0	0	3	12	0	302	13	0	315	517
07:30 AM	0	11	174	0	0	185	0	0	185	2	0	0	2	4	0	275	11	0	286	475
07:45 AM	0	9	184	0	0	193	0	0	193	3	0	0	3	6	0	235	15	0	250	449
08:00 AM	0	23	172	0	0	195	0	0	195	10	0	0	9	19	0	218	18	0	236	450
Total Volume	0	64	699	0	0	763	0	0	763	24	0	0	17	41	0	1030	57	0	1087	1891
% App. Total		8.4	91.6	0	0	97.8	0	0	97.8	58.5	0	0	41.5	41	0	94.8	5.2	0	95.7	1891
PHF	.000	.696	.950	.000	.000	.978	.000	.000	.978	.600	.000	.472	.539	.539	.000	.853	.792	.000	.863	.914

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii

Counted By: RJ, EV  
Counter: TU-0650, TU-0654  
Weather: Clear

File Name : DiKaa PM  
Site Code : 00000002  
Start Date : 1/24/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Southbound				Dillingham Boulevard Westbound				Kaaahi Street Northbound				Dillingham Boulevard Eastbound												
	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	Int. Total
03:00 PM	0	11	184	0	204	12	0	8	7	27	0	323	11	0	334	0	323	11	0	334	0	323	11	0	565
03:15 PM	0	10	228	0	242	8	0	14	8	30	0	304	11	0	315	0	304	11	0	315	0	304	11	0	587
03:30 PM	0	5	258	0	265	14	0	17	10	41	0	339	11	0	350	0	339	11	0	350	0	339	11	0	656
03:45 PM	0	7	206	0	216	7	0	6	12	25	0	291	4	0	295	0	291	4	0	295	0	291	4	0	536
Total	0	33	876	0	927	41	0	45	37	123	0	1257	37	0	1294	0	1257	37	0	1294	0	1257	37	0	2344
04:00 PM	0	8	238	0	253	9	0	20	18	47	0	310	3	0	313	0	310	3	0	313	0	310	3	0	613
04:15 PM	0	12	235	0	254	13	0	11	12	36	0	294	5	0	299	0	294	5	0	299	0	294	5	0	589
04:30 PM	0	14	249	0	273	15	0	13	17	45	0	308	7	0	315	0	308	7	0	315	0	308	7	0	633
04:45 PM	0	7	241	0	252	8	0	12	7	27	0	325	12	0	337	0	325	12	0	337	0	325	12	0	616
Total	0	41	963	0	1032	45	0	56	54	155	0	1237	27	0	1264	0	1237	27	0	1264	0	1237	27	0	2451
05:00 PM	0	5	233	0	240	13	0	10	10	33	0	314	2	0	316	0	314	2	0	316	0	314	2	0	589
05:15 PM	0	3	269	0	282	4	0	9	15	28	0	326	4	0	330	0	326	4	0	330	0	326	4	0	640
05:30 PM	0	4	221	0	233	10	0	6	11	27	0	299	6	0	305	0	299	6	0	305	0	299	6	0	565
05:45 PM	0	3	193	0	200	8	0	9	8	25	0	266	6	0	272	0	266	6	0	272	0	266	6	0	497
Total	0	15	916	0	955	35	0	34	44	113	0	1205	18	0	1223	0	1205	18	0	1223	0	1205	18	0	2291
Grand Total	0	89	2755	0	2914	121	0	135	135	391	0	3699	82	0	3781	0	3699	82	0	3781	0	3699	82	0	7086
Approch %	0	3.1	94.5	0	30.9	1.7	0	34.5	34.5	5.5	0	97.8	2.2	0	53.4	0	97.8	2.2	0	53.4	0	97.8	2.2	0	
Total %	0	1.3	38.9	0	41.1	1.7	0	1.9	1.9	5.5	0	52.2	1.2	0		0	52.2	1.2	0		0	52.2	1.2	0	

Start Time	Dillingham Boulevard Southbound				Kaaahi Street Northbound				Dillingham Boulevard Eastbound																
	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	Int. Total
04:30 PM	0	14	249	0	263	15	0	0	13	28	0	308	7	0	315	0	308	7	0	315	0	308	7	0	606
04:45 PM	0	7	241	0	248	8	0	0	12	20	0	325	12	0	337	0	325	12	0	337	0	325	12	0	605
05:00 PM	0	5	233	0	238	13	0	10	10	23	0	314	2	0	316	0	314	2	0	316	0	314	2	0	577
05:15 PM	0	3	269	0	272	4	0	0	9	13	0	326	4	0	330	0	326	4	0	330	0	326	4	0	615
Total Volume	0	29	992	0	1021	40	0	0	44	84	0	1273	25	0	1298	0	1273	25	0	1298	0	1273	25	0	2403
% App. Total	0.000	.518	.922	.000	.938	.667	.000	.846	.846	.750	.000	.976	.521	.000	.963	.000	.976	.521	.000	.963	.000	.976	.521	.000	.977

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: DY, GL  
Counter: TU-0654, TU-0653  
Weather: Clear

File Name : KingDilLi AM  
Site Code : 00000004  
Start Date : 10/17/2013  
Page No : 1

Start Time	Groups Printed- Unshifted																				
	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	31	42	1	4	78	33	63	14	0	110	0	30	64	22	116	0	86	3	22	111	415
06:15 AM	27	65	5	7	104	66	59	20	0	145	0	37	100	34	171	0	126	5	38	169	589
06:30 AM	43	61	4	3	111	71	89	25	0	185	0	76	139	21	236	0	168	1	40	209	741
06:45 AM	40	75	8	5	128	113	122	14	0	249	0	100	202	11	313	0	174	0	38	212	902
<b>Total</b>	141	243	18	19	421	283	333	73	0	689	0	243	505	88	836	0	554	9	138	701	2647
07:00 AM	72	54	5	13	144	101	119	39	0	259	0	83	199	23	305	0	216	3	38	257	965
07:15 AM	72	79	0	5	156	145	216	29	0	390	0	97	267	9	373	0	213	6	78	297	1216
07:30 AM	98	95	7	9	209	146	199	39	0	384	0	120	284	11	415	0	213	3	53	269	1277
07:45 AM	86	103	8	9	206	163	170	32	0	365	0	89	223	22	334	0	227	9	57	293	1198
<b>Total</b>	328	331	20	36	715	555	704	139	0	1398	0	389	973	65	1427	0	869	21	226	1116	4656
08:00 AM	98	81	3	4	186	158	189	46	0	393	0	97	219	22	338	0	208	5	48	261	1178
08:15 AM	78	99	2	5	184	154	204	42	0	400	0	122	194	25	341	0	157	12	40	209	1134
08:30 AM	44	94	5	12	155	128	174	28	0	330	0	109	198	16	323	0	186	10	39	235	1043
08:45 AM	42	83	2	1	128	119	150	33	0	302	0	104	169	20	293	0	139	13	33	185	908
<b>Total</b>	262	357	12	22	653	559	717	149	0	1425	0	432	780	83	1295	0	690	40	160	890	4263
<b>Grand Total</b>	731	931	50	77	1789	1397	1754	361	0	3512	0	1064	2258	236	3558	0	2113	70	524	2707	11566
Approch %	40.9	52	2.8	4.3	15.5	39.8	49.9	10.3	0	30.4	0	29.9	63.5	6.6	30.8	0	78.1	2.6	19.4	23.4	
Total %	6.3	8	0.4	0.7	15.5	12.1	15.2	3.1	0	30.4	0	9.2	19.5	2	30.8	0	18.3	0.6	4.5		

Start Time	Groups Printed- Unshifted																			
	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
07:15 AM	72	79	0	0	151	145	216	29	0	390	0	97	267	364	0	213	6	219	1124	
07:30 AM	98	95	7	7	200	146	199	39	0	384	0	120	284	404	0	213	3	216	1204	
07:45 AM	86	103	8	8	197	163	170	32	0	365	0	89	223	312	0	227	9	236	1110	
08:00 AM	98	81	3	3	182	158	189	46	0	393	0	97	219	316	0	208	5	213	1104	
Total Volume	354	358	18	18	730	612	774	146	0	1532	0	403	993	1396	0	861	23	884	4542	
% App. Total	48.5	49	2.5	2.5	15.5	39.9	50.5	9.5	0	30.4	0	28.9	71.1	30.8	0	97.4	2.6	19.4	23.4	
PHF	.903	.869	.563	.563	.913	.939	.896	.793	.000	.975	.000	.840	.874	.864	.000	.948	.639	.936		

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: DY, TO  
Counter: TU-0653, TU-0654  
Weather: Clear

File Name : KingDilLi PM  
Site Code : 00000004  
Start Date : 10/17/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
	03:00 PM	39	59	14	10	122	132	198	37	0	367	0	135	123	41	299	0	120	2	35	157
03:15 PM	32	91	8	5	136	143	189	44	0	376	0	175	154	9	338	4	169	4	27	204	1054
03:30 PM	34	70	8	10	122	174	309	28	0	511	0	178	203	18	399	0	155	10	10	175	1207
03:45 PM	35	76	8	6	125	169	331	40	0	540	0	149	220	5	374	0	156	6	38	200	1239
<b>Total</b>	140	296	38	31	505	618	1027	149	0	1794	0	637	700	73	1410	4	600	22	110	736	4445
04:00 PM	41	75	7	2	125	201	271	31	0	503	0	147	191	27	365	0	164	5	48	217	1210
04:15 PM	40	68	3	2	113	188	286	48	0	522	0	156	221	31	408	0	148	5	50	203	1246
04:30 PM	35	79	9	0	123	181	333	35	0	549	0	175	198	30	403	0	159	10	29	198	1273
04:45 PM	47	69	4	0	120	203	388	39	0	630	0	176	220	11	407	0	174	10	39	223	1380
<b>Total</b>	163	291	23	4	481	773	1278	153	0	2204	0	654	830	99	1583	0	645	30	166	841	5109
05:00 PM	47	76	7	8	138	228	386	65	0	679	0	181	251	25	457	0	172	7	30	209	1483
05:15 PM	43	87	10	12	152	247	436	37	0	720	0	186	220	16	422	0	149	7	26	182	1476
05:30 PM	36	56	4	5	101	213	423	47	0	683	0	201	226	10	437	0	141	7	37	185	1406
05:45 PM	66	67	11	3	147	245	322	39	0	606	0	150	184	19	353	0	136	2	22	160	1266
<b>Total</b>	192	286	32	28	538	933	1567	188	0	2688	0	718	881	70	1669	0	598	23	115	736	5631
<b>Grand Total</b>	495	873	93	63	1524	2324	3872	490	0	6686	0	2009	2411	242	4662	4	1843	75	391	2313	15185
Approch %	32.5	57.3	6.1	4.1		34.8	57.9	7.3	0		0	43.1	51.7	5.2		0.2	79.7	3.2	16.9		
Total %	3.3	5.7	0.6	0.4	10	15.3	25.5	3.2	0	44	0	13.2	15.9	1.6	30.7	0	12.1	0.5	2.6	15.2	

Start Time	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
	04:45 PM	47	69	69	4	120	203	388	39	0	630	0	176	220	220	396	0	174	10	184	1330
05:00 PM	47	76	76	7	130	228	386	66	0	679	0	181	251	251	432	0	172	7	179	1420	
05:15 PM	43	87	87	10	140	247	436	37	0	720	0	186	220	220	406	0	149	7	156	1422	
05:30 PM	36	56	56	4	96	213	423	47	0	683	0	201	226	226	427	0	141	7	148	1354	
Total Volume	173	288	288	25	486	891	1633	188	0	2712	0	744	917	917	1661	0	636	31	667	5526	
% App. Total	35.6	59.3	59.3	5.1		32.9	60.2	6.9	0		0	44.8	55.2	55.2		0	95.4	4.6	4.6		
PHF	.920	.828	.828	.625	.868	.902	.936	.723	.000	.942	.000	.925	.913	.913	.961	.000	.914	.775	.906	.972	



# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: CY, KG  
Counter: D4-3890, D4-5675  
Weather: Clear

File Name : KalBec AM  
Site Code : 00000002  
Start Date : 10/15/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Kalihi Street Southbound				Westbound				Kalihi Street Northbound				Beckley Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	77	7	0	84	0	101	0	2	109	63	0	4	1	68	63	0	4	1	68	261
06:15 AM	0	106	2	0	108	8	137	0	2	147	80	0	4	0	84	80	0	4	0	84	339
06:30 AM	0	94	4	0	98	9	147	0	11	167	95	0	7	0	102	95	0	7	0	102	367
06:45 AM	0	65	1	0	66	7	151	0	9	167	99	0	5	0	104	99	0	5	0	104	337
<b>Total</b>	<b>0</b>	<b>342</b>	<b>14</b>	<b>0</b>	<b>356</b>	<b>30</b>	<b>536</b>	<b>0</b>	<b>24</b>	<b>590</b>	<b>337</b>	<b>0</b>	<b>20</b>	<b>1</b>	<b>358</b>	<b>337</b>	<b>0</b>	<b>20</b>	<b>1</b>	<b>358</b>	<b>1304</b>
07:00 AM	0	91	0	0	91	5	153	0	32	190	115	0	4	1	120	115	0	4	1	120	401
07:15 AM	0	83	3	0	86	10	141	0	81	232	77	0	26	0	103	77	0	26	0	103	421
07:30 AM	0	136	5	0	141	15	153	0	152	320	77	0	21	3	101	77	0	21	3	101	562
07:45 AM	0	147	7	0	154	14	182	0	166	362	86	0	24	2	112	86	0	24	2	112	628
<b>Total</b>	<b>0</b>	<b>457</b>	<b>15</b>	<b>0</b>	<b>472</b>	<b>44</b>	<b>629</b>	<b>0</b>	<b>431</b>	<b>1104</b>	<b>355</b>	<b>0</b>	<b>75</b>	<b>6</b>	<b>436</b>	<b>355</b>	<b>0</b>	<b>75</b>	<b>6</b>	<b>436</b>	<b>2012</b>
08:00 AM	2	120	5	0	127	5	166	2	40	213	70	0	12	3	85	70	0	12	3	85	425
08:15 AM	0	96	7	0	103	12	183	0	7	202	72	0	17	0	89	72	0	17	0	89	394
08:30 AM	0	107	6	0	113	8	183	0	1	192	83	0	12	0	95	83	0	12	0	95	400
08:45 AM	0	92	2	0	94	10	162	0	2	174	86	0	8	0	94	86	0	8	0	94	362
<b>Total</b>	<b>2</b>	<b>415</b>	<b>20</b>	<b>0</b>	<b>437</b>	<b>35</b>	<b>694</b>	<b>2</b>	<b>50</b>	<b>781</b>	<b>311</b>	<b>0</b>	<b>49</b>	<b>3</b>	<b>363</b>	<b>311</b>	<b>0</b>	<b>49</b>	<b>3</b>	<b>363</b>	<b>1581</b>
<b>Grand Total</b>	<b>2</b>	<b>1214</b>	<b>49</b>	<b>0</b>	<b>1265</b>	<b>109</b>	<b>1859</b>	<b>2</b>	<b>505</b>	<b>2475</b>	<b>1003</b>	<b>0</b>	<b>144</b>	<b>10</b>	<b>1157</b>	<b>1003</b>	<b>0</b>	<b>144</b>	<b>10</b>	<b>1157</b>	<b>4897</b>
<b>Approch %</b>	<b>0.2</b>	<b>96</b>	<b>3.9</b>	<b>0</b>	<b>25.8</b>	<b>4.4</b>	<b>75.1</b>	<b>0.1</b>	<b>20.4</b>	<b>50.5</b>	<b>86.7</b>	<b>0</b>	<b>12.4</b>	<b>0.9</b>	<b>23.6</b>	<b>86.7</b>	<b>0</b>	<b>12.4</b>	<b>0.9</b>	<b>23.6</b>	
<b>Total %</b>	<b>0</b>	<b>24.8</b>	<b>1</b>	<b>0</b>	<b>25.8</b>	<b>2.2</b>	<b>38</b>	<b>0</b>	<b>10.3</b>	<b>50.5</b>	<b>20.5</b>	<b>0</b>	<b>2.9</b>	<b>0.2</b>	<b>23.6</b>	<b>20.5</b>	<b>0</b>	<b>2.9</b>	<b>0.2</b>	<b>23.6</b>	

Start Time	Kalihi Street Southbound				Westbound				Kalihi Street Northbound				Beckley Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:30 AM	0	136	5	0	141	15	153	0	0	168	77	0	21	0	98	77	0	21	0	98	407
07:45 AM	0	147	7	0	154	14	182	0	0	196	86	0	24	0	110	86	0	24	0	110	460
08:00 AM	2	120	5	0	127	5	166	2	2	173	70	0	12	0	82	70	0	12	0	82	382
08:15 AM	0	96	7	0	103	12	183	0	0	195	72	0	17	0	89	72	0	17	0	89	387
<b>Total Volume</b>	<b>2</b>	<b>499</b>	<b>24</b>	<b>0</b>	<b>525</b>	<b>46</b>	<b>684</b>	<b>2</b>	<b>2</b>	<b>732</b>	<b>305</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>379</b>	<b>305</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>379</b>	<b>1636</b>
<b>% App. Total</b>	<b>0.4</b>	<b>95</b>	<b>4.6</b>	<b>0</b>	<b>25.8</b>	<b>6.3</b>	<b>93.4</b>	<b>0.3</b>	<b>0.3</b>	<b>93.4</b>	<b>80.5</b>	<b>0</b>	<b>19.5</b>	<b>0</b>	<b>86.1</b>	<b>80.5</b>	<b>0</b>	<b>19.5</b>	<b>0</b>	<b>86.1</b>	<b>.889</b>
<b>PHF</b>	<b>.250</b>	<b>.849</b>	<b>.857</b>	<b>0</b>	<b>.852</b>	<b>.767</b>	<b>.934</b>	<b>.250</b>	<b>.250</b>	<b>.934</b>	<b>.887</b>	<b>.000</b>	<b>.771</b>	<b>.000</b>	<b>.861</b>	<b>.887</b>	<b>.000</b>	<b>.771</b>	<b>.000</b>	<b>.861</b>	<b>.889</b>

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: CY, KG  
Counter: D4-3890, D4-5675  
Weather: Clear

File Name : KalBec PM  
Site Code : 00000004  
Start Date : 10/15/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Kalihi Street Southbound				Westbound				Kalihi Street Northbound				Beckley Street Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
03:00 PM	0	68	7	0	75	0	266	2	9	291	87	0	8	0	95	87	0	8	0	95	461
03:15 PM	0	69	7	0	76	0	238	0	22	286	79	0	13	0	92	79	0	13	0	92	454
03:30 PM	0	89	4	0	93	0	286	0	9	322	85	0	11	0	96	85	0	11	0	96	511
03:45 PM	0	86	4	0	90	0	325	0	9	371	99	0	8	0	107	99	0	8	0	107	568
Total	0	312	22	0	334	0	1115	2	49	1270	350	0	40	0	390	350	0	40	0	390	1994
04:00 PM	0	72	4	0	76	0	272	0	6	307	85	0	12	0	97	85	0	12	0	97	480
04:15 PM	0	72	3	0	75	0	306	0	10	342	102	0	10	0	112	102	0	10	0	112	529
04:30 PM	0	74	9	0	83	0	289	0	5	326	94	0	10	0	104	94	0	10	0	104	513
04:45 PM	0	65	5	0	70	0	340	0	26	391	81	0	8	0	89	81	0	8	0	89	550
Total	0	283	21	0	304	0	1207	0	47	1366	362	0	40	0	402	362	0	40	0	402	2072
05:00 PM	0	71	9	0	80	0	291	0	5	331	72	0	22	0	94	72	0	22	0	94	505
05:15 PM	0	105	5	0	110	0	318	0	17	365	63	0	23	0	86	63	0	23	0	86	561
05:30 PM	0	88	6	0	94	0	280	0	8	310	49	0	10	0	59	49	0	10	0	59	463
05:45 PM	0	85	5	0	90	0	279	0	13	315	56	0	10	0	66	56	0	10	0	66	471
Total	0	349	25	0	374	0	1168	0	43	1321	240	0	65	0	305	240	0	65	0	305	2000
Grand Total	0	944	68	0	1012	0	3490	2	139	3957	952	0	145	0	1097	952	0	145	0	1097	6066
Approch %	0	93.3	6.7	0	16.7	0	86.2	0.1	3.5	65.2	86.8	0	13.2	0	18.1	86.8	0	13.2	0	18.1	
Total %	0	15.6	1.1	0	16.7	0	57.5	0	2.3	65.2	15.7	0	2.4	0		15.7	0	2.4	0		

Start Time	Kalihi Street Southbound				Westbound				Kalihi Street Northbound				Beckley Street Eastbound				Int. Total				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left		Thru	Right	Peds	App. Total
04:30 PM	0	74	9	0	83	0	32	289	0	321	94	0	10	0	104	94	0	10	0	104	508
04:45 PM	0	65	5	0	70	0	25	340	0	365	81	0	8	0	89	81	0	8	0	89	524
05:00 PM	0	71	9	0	80	0	35	291	0	326	72	0	22	0	94	72	0	22	0	94	500
05:15 PM	0	105	5	0	110	0	30	318	0	348	63	0	23	0	86	63	0	23	0	86	544
Total Volume	0	315	28	0	343	0	122	1238	0	1360	310	0	63	0	373	310	0	63	0	373	2076
% App. Total	0	91.8	8.2	0	16.7	0	9	91	0	93.2	83.1	0	16.9	0	18.1	83.1	0	16.9	0	18.1	
PHF	.000	.750	.778	0	.780	.000	.871	.910	.000	.932	.824	.000	.685	.897	.954	.824	.000	.685	.897	.954	

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By:MM, YS  
Counter:D4-5675, D4-5676  
Weather:Clear

File Name : Kalkin AM  
Site Code : 00000001  
Start Date : 10/15/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Kalihi Street Southbound				S. King Street Westbound				Kalihi Street Northbound				S. King Street Eastbound						
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	App. Total	Int. Total	
	App. Total				App. Total				App. Total				App. Total						
06:00 AM	25	59	7	1	21	58	16	3	4	36	6	2	48	49	108	4	0	161	399
06:15 AM	28	71	3	16	22	62	15	18	2	74	6	2	84	46	229	6	1	282	601
06:30 AM	20	65	5	14	23	67	15	21	5	86	10	2	103	49	280	4	2	335	668
06:45 AM	25	42	3	8	19	96	21	11	2	81	15	3	101	48	268	6	0	322	648
Total	98	237	18	39	85	283	67	53	13	277	37	9	336	192	885	20	3	1100	2316
07:00 AM	35	59	0	24	35	98	20	35	3	82	15	17	117	46	277	7	23	353	776
07:15 AM	35	65	5	66	31	114	31	66	3	74	11	9	97	41	250	8	18	317	827
07:30 AM	47	87	5	85	42	95	36	167	4	67	23	69	163	36	216	8	16	276	1003
07:45 AM	47	118	16	194	42	116	44	211	6	74	12	8	100	47	275	8	12	342	1230
Total	164	329	26	369	150	423	131	479	16	297	61	103	477	170	1018	31	69	1288	3836
08:00 AM	49	67	7	36	39	121	23	43	5	75	15	2	97	54	240	10	4	308	790
08:15 AM	34	75	11	19	25	110	32	23	6	98	19	7	130	67	261	10	6	344	803
08:30 AM	50	89	5	6	19	92	37	14	8	116	26	6	156	50	216	4	4	274	742
08:45 AM	31	50	7	3	27	121	25	5	3	79	14	2	98	61	211	11	1	284	651
Total	164	281	30	64	110	444	117	85	22	368	74	17	481	232	928	35	15	1210	2986
Grand Total	426	847	74	472	345	1150	315	617	51	942	172	129	1294	594	2831	86	87	3598	9138
Approch %	23.4	46.6	4.1	25.9	14.2	47.4	13	25.4	3.9	72.8	13.3	10	14.2	16.5	78.7	2.4	2.4	39.4	
Total %	4.7	9.3	0.8	5.2	3.8	12.6	3.4	6.8	0.6	10.3	1.9	1.4	14.2	6.5	31	0.9	1		

Start Time	Kalihi Street Southbound				S. King Street Westbound				Kalihi Street Northbound				S. King Street Eastbound					
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	App. Total	Int. Total
	App. Total				App. Total				App. Total				App. Total					
07:45 AM	47	118	16	7	42	116	44	202	6	74	12	92	47	275	8	330	805	
08:00 AM	49	67	7	123	39	121	23	183	5	75	15	95	54	240	10	304	705	
08:15 AM	34	75	11	120	25	110	32	167	6	98	19	123	67	261	10	338	748	
08:30 AM	50	89	5	144	19	92	37	148	8	116	26	150	50	216	4	270	712	
Total Volume	180	349	39	568	125	439	136	700	25	363	72	460	218	992	32	1242	2970	
% App. Total	31.7	61.4	6.9	785	17.9	62.7	19.4	866	5.4	78.9	15.7	767	17.6	79.9	2.6	919	922	
PHF	.900	.739	.609	.785	.744	.907	.773	.866	.781	.782	.692	.767	.813	.902	.800	.919		

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: MM, YS  
Counter: D4-5675, D4-5676  
Weather: Clear

File Name : Kalkin PM  
Site Code : 00000003  
Start Date : 10/15/2013  
Page No : 1

### Groups Printed- Unshifted

Start Time	Kalihi Street (Road Closure Until 3:30PM ) Southbound				S. King Street Westbound				Kalihi Street Northbound				S. King Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	62	9	8	79	40	124	67	1	232	9	153	11	3	176	60	169	14	5	248	735
03:15 PM	0	66	13	1	80	33	117	61	14	225	12	159	17	5	193	48	175	6	1	230	728
03:30 PM	26	60	9	9	104	30	127	114	14	285	5	150	13	0	168	57	208	11	3	279	836
03:45 PM	17	39	4	13	73	28	146	112	13	299	7	206	12	46	271	66	149	5	8	228	871
<b>Total</b>	<b>43</b>	<b>227</b>	<b>35</b>	<b>31</b>	<b>336</b>	<b>131</b>	<b>514</b>	<b>354</b>	<b>42</b>	<b>1041</b>	<b>33</b>	<b>668</b>	<b>53</b>	<b>54</b>	<b>808</b>	<b>231</b>	<b>701</b>	<b>36</b>	<b>17</b>	<b>985</b>	<b>3170</b>
04:00 PM	41	58	9	10	118	26	152	69	37	284	12	155	8	2	177	60	166	7	6	239	818
04:15 PM	22	36	3	7	68	43	147	84	15	289	5	202	13	20	240	65	180	4	10	259	856
04:30 PM	34	42	11	6	93	30	171	62	32	295	6	183	8	21	218	62	179	5	4	250	856
04:45 PM	18	33	5	3	59	41	157	79	20	297	6	193	16	2	217	79	181	2	7	269	842
<b>Total</b>	<b>115</b>	<b>169</b>	<b>28</b>	<b>26</b>	<b>338</b>	<b>140</b>	<b>627</b>	<b>294</b>	<b>104</b>	<b>1165</b>	<b>29</b>	<b>733</b>	<b>45</b>	<b>45</b>	<b>852</b>	<b>266</b>	<b>706</b>	<b>18</b>	<b>27</b>	<b>1017</b>	<b>3372</b>
05:00 PM	37	39	5	15	96	26	181	82	29	318	11	169	10	0	190	52	188	2	8	250	854
05:15 PM	37	46	15	8	106	43	174	67	17	301	12	209	12	22	255	66	146	1	6	219	881
05:30 PM	37	52	5	4	98	27	170	71	36	304	3	169	4	3	179	63	145	9	11	228	809
05:45 PM	31	44	8	6	89	20	179	74	4	277	16	183	9	14	222	66	151	5	8	230	818
<b>Total</b>	<b>142</b>	<b>181</b>	<b>33</b>	<b>33</b>	<b>389</b>	<b>116</b>	<b>704</b>	<b>294</b>	<b>86</b>	<b>1200</b>	<b>42</b>	<b>730</b>	<b>35</b>	<b>39</b>	<b>846</b>	<b>247</b>	<b>630</b>	<b>17</b>	<b>33</b>	<b>927</b>	<b>3362</b>
<b>Grand Total</b>	<b>300</b>	<b>577</b>	<b>96</b>	<b>90</b>	<b>1063</b>	<b>387</b>	<b>1845</b>	<b>942</b>	<b>232</b>	<b>3406</b>	<b>104</b>	<b>2131</b>	<b>133</b>	<b>138</b>	<b>2506</b>	<b>744</b>	<b>2037</b>	<b>71</b>	<b>77</b>	<b>2929</b>	<b>9904</b>
<b>Approch %</b>	<b>28.2</b>	<b>54.3</b>	<b>9</b>	<b>8.5</b>	<b>10.7</b>	<b>11.4</b>	<b>54.2</b>	<b>27.7</b>	<b>6.8</b>	<b>34.4</b>	<b>4.2</b>	<b>85</b>	<b>5.3</b>	<b>5.5</b>	<b>25.4</b>	<b>69.5</b>	<b>2.4</b>	<b>2.6</b>	<b>0.8</b>	<b>29.6</b>	
<b>Total %</b>	<b>3</b>	<b>5.8</b>	<b>1</b>	<b>0.9</b>	<b>10.7</b>	<b>3.9</b>	<b>18.6</b>	<b>9.5</b>	<b>2.3</b>	<b>34.4</b>	<b>1.1</b>	<b>21.5</b>	<b>1.3</b>	<b>1.4</b>	<b>25.3</b>	<b>7.5</b>	<b>20.6</b>	<b>0.7</b>	<b>0.8</b>		

Start Time	Kalihi Street (Road Closure Until 3:30PM ) Southbound				S. King Street Westbound				Kalihi Street Northbound				S. King Street Eastbound							
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total
04:30 PM	34	42	4	11	87	30	171	62	62	263	6	183	8	8	197	62	179	5	246	793
04:45 PM	18	33	5	5	56	41	157	79	79	277	6	193	16	16	215	79	181	2	262	810
05:00 PM	37	39	5	5	81	26	181	82	82	289	11	169	10	10	190	52	188	2	242	802
05:15 PM	37	46	15	15	98	43	174	67	67	284	12	209	12	12	233	66	146	1	213	828
<b>Total Volume</b>	<b>126</b>	<b>160</b>	<b>36</b>	<b>36</b>	<b>322</b>	<b>140</b>	<b>683</b>	<b>290</b>	<b>290</b>	<b>1113</b>	<b>35</b>	<b>754</b>	<b>46</b>	<b>46</b>	<b>835</b>	<b>259</b>	<b>694</b>	<b>10</b>	<b>963</b>	<b>3233</b>
<b>% App. Total</b>	<b>39.1</b>	<b>49.7</b>	<b>11.2</b>	<b>11.2</b>	<b>.821</b>	<b>12.6</b>	<b>61.4</b>	<b>26.1</b>	<b>26.1</b>	<b>.963</b>	<b>4.2</b>	<b>90.3</b>	<b>5.5</b>	<b>5.5</b>	<b>.896</b>	<b>26.9</b>	<b>72.1</b>	<b>1</b>	<b>.919</b>	<b>.976</b>
<b>PHF</b>	<b>.851</b>	<b>.870</b>	<b>.600</b>	<b>.600</b>	<b>.821</b>	<b>.814</b>	<b>.943</b>	<b>.884</b>	<b>.884</b>	<b>.963</b>	<b>.729</b>	<b>.902</b>	<b>.719</b>	<b>.719</b>	<b>.896</b>	<b>.820</b>	<b>.923</b>	<b>.500</b>	<b>.919</b>	

Peak Hour Analysis From 03:00 PM to 05:30 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

# Wilson Okamoto Corporation

1907 S. Beretania Street  
Honolulu, HI 96826

Counted By: PA, BE  
Counter: T-1839, T-1841  
Weather: Clear

File Name : KaiKau AM  
Site Code : 00000002  
Start Date : 10/15/2013  
Page No : 1

## Groups Printed- Unshifted

Start Time	Kalihi Street Southbound				Kaunualii Street Westbound				Kalihi Street Northbound				Kaunualii Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
	06:00 AM	1	90	2	0	93	0	1	0	10	11	0	37	0	2	39	3	0	4	7	14
06:15 AM	2	100	4	2	108	3	0	1	8	12	0	75	1	2	78	3	2	2	2	9	207
06:30 AM	6	95	2	1	104	0	0	2	6	8	2	81	2	3	88	5	1	2	2	10	210
06:45 AM	5	65	2	2	74	1	0	2	12	15	0	77	1	3	81	2	0	5	3	10	180
<b>Total</b>	<b>14</b>	<b>350</b>	<b>10</b>	<b>5</b>	<b>379</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>36</b>	<b>46</b>	<b>2</b>	<b>270</b>	<b>4</b>	<b>10</b>	<b>286</b>	<b>13</b>	<b>3</b>	<b>13</b>	<b>14</b>	<b>43</b>	<b>754</b>
07:00 AM	5	96	2	5	108	2	0	1	35	38	0	83	3	12	98	10	0	0	6	16	260
07:15 AM	14	91	2	33	140	2	1	1	80	84	1	53	4	41	99	4	4	2	25	35	358
07:30 AM	15	87	1	56	159	1	2	1	111	115	0	79	13	55	147	4	19	1	14	38	459
07:45 AM	15	142	4	28	189	1	8	13	41	63	2	67	11	27	107	2	18	3	20	43	402
<b>Total</b>	<b>49</b>	<b>416</b>	<b>9</b>	<b>122</b>	<b>596</b>	<b>6</b>	<b>11</b>	<b>16</b>	<b>267</b>	<b>300</b>	<b>3</b>	<b>282</b>	<b>31</b>	<b>135</b>	<b>451</b>	<b>20</b>	<b>41</b>	<b>6</b>	<b>65</b>	<b>132</b>	<b>1479</b>
08:00 AM	9	98	7	14	128	9	5	20	14	48	0	87	6	22	115	1	4	2	6	13	304
08:15 AM	3	92	1	2	98	4	2	11	11	28	0	74	3	5	82	4	0	2	4	10	218
08:30 AM	8	97	1	11	117	3	1	5	4	13	0	104	1	13	118	2	0	3	0	5	253
08:45 AM	1	96	5	5	107	1	1	2	9	13	1	100	2	5	108	1	1	3	5	10	238
<b>Total</b>	<b>21</b>	<b>383</b>	<b>14</b>	<b>32</b>	<b>450</b>	<b>17</b>	<b>9</b>	<b>38</b>	<b>38</b>	<b>102</b>	<b>1</b>	<b>365</b>	<b>12</b>	<b>45</b>	<b>423</b>	<b>8</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>38</b>	<b>1013</b>
<b>Grand Total</b>	<b>84</b>	<b>1149</b>	<b>33</b>	<b>159</b>	<b>1425</b>	<b>27</b>	<b>21</b>	<b>59</b>	<b>341</b>	<b>448</b>	<b>6</b>	<b>917</b>	<b>47</b>	<b>190</b>	<b>1160</b>	<b>41</b>	<b>49</b>	<b>29</b>	<b>94</b>	<b>213</b>	<b>3246</b>
Approach %	5.9	80.6	2.3	11.2	43.9	0.8	0.6	1.8	10.5	13.8	0.2	28.3	1.4	5.9	35.7	1.3	1.5	0.9	2.9	6.6	
Total %	2.6	35.4	1	4.9																	

Start Time	Kalihi Street Southbound				Kaunualii Street Westbound				Kalihi Street Northbound				Kaunualii Street Eastbound								
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
	07:45 AM	15	142	4		161	1	8	13		22	2	67	11		80	2	18	3		23
08:00 AM	9	98	7		114	9	5	20		34	0	87	6		93	1	4	2		7	248
08:15 AM	3	92	1		96	4	2	11		17	0	74	3		77	4	0	2		6	196
08:30 AM	8	97	1		106	3	1	5		9	0	104	1		105	2	0	3		5	225
Total Volume	35	429	13		477	17	16	49		82	2	332	21		355	9	22	10		41	955
% App. Total	7.3	89.9	2.7		741	20.7	19.5	59.8		603	0.6	93.5	5.9		845	22	53.7	24.4		446	835
PHF	.583	.755	.464			.472	.500	.613			.250	.798	.477			.563	.306	.833			

Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:45 AM





# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: DY, GC  
Counter: D4-5675, D4-3890  
Weather: Clear

File Name : NimKal AM  
Site Code : 00000001  
Start Date : 10/15/2013  
Page No : 1

Groups Printed- Unshifted

Start Time	Kalihi Street Southbound						Nimitz Highway Westbound						Kalihi Street Northbound						Nimitz Highway Eastbound															
	Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds					
	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total				
06:00 AM	36	115	70	4	5	4	0	212	12	24	248	14	36	11	61	8	592	12	1	8	613	1037	10	848	19	0	877	1344	10	848	19	0	877	1344
06:15 AM	19	103	69	4	11	4	0	293	14	5	312	3	36	13	52	10	848	19	0	877	1344	10	848	19	0	877	1344	10	848	19	0	877	1344	
06:30 AM	46	160	98	2	14	2	0	282	12	13	307	9	34	30	73	12	909	13	1	935	1475	12	909	13	1	935	1475	12	909	13	1	935	1475	
06:45 AM	45	142	89	0	8	0	0	323	13	4	340	5	25	28	58	13	956	7	6	982	1522	13	956	7	6	982	1522	13	956	7	6	982	1522	
<b>Total</b>	146	520	326	10	38	10	0	1110	51	46	1207	31	131	82	244	43	3305	51	8	3407	5378	43	3305	51	8	3407	5378	43	3305	51	8	3407	5378	
07:00 AM	42	126	75	1	8	1	0	362	16	9	387	11	40	26	80	10	1033	3	2	1048	1641	10	1033	3	2	1048	1641	10	1033	3	2	1048	1641	
07:15 AM	29	105	71	4	4	1	0	406	11	7	424	11	20	24	56	12	1061	2	4	1079	1664	12	1061	2	4	1079	1664	12	1061	2	4	1079	1664	
07:30 AM	45	159	94	19	1	1	0	371	22	10	403	13	37	21	74	16	929	10	12	967	1603	16	929	10	12	967	1603	16	929	10	12	967	1603	
07:45 AM	42	170	111	17	0	0	0	333	25	6	364	13	33	21	68	27	836	8	4	875	1477	27	836	8	4	875	1477	27	836	8	4	875	1477	
<b>Total</b>	158	560	351	48	3	3	0	1472	74	32	1578	48	130	92	278	65	3859	23	22	3969	6385	65	3859	23	22	3969	6385	65	3859	23	22	3969	6385	
08:00 AM	33	142	96	10	3	3	1	354	12	4	371	12	31	23	67	19	816	5	1	841	1421	19	816	5	1	841	1421	19	816	5	1	841	1421	
08:15 AM	37	135	83	14	1	1	0	346	16	5	367	5	32	24	61	17	888	4	3	912	1475	17	888	4	3	912	1475	17	888	4	3	912	1475	
08:30 AM	37	129	79	12	1	1	0	324	18	4	346	15	40	16	72	10	795	6	3	814	1361	10	795	6	3	814	1361	10	795	6	3	814	1361	
08:45 AM	35	130	72	22	1	1	0	290	16	4	310	11	41	22	74	20	689	8	2	719	1233	20	689	8	2	719	1233	20	689	8	2	719	1233	
<b>Total</b>	142	536	330	58	6	6	1	1314	62	17	1394	43	144	85	274	66	3188	23	9	3286	5490	66	3188	23	9	3286	5490	66	3188	23	9	3286	5490	
<b>Grand Total</b>	446	1616	1007	144	19	19	1	3896	187	95	4179	122	405	259	796	174	10352	97	39	10662	17253	174	10352	97	39	10662	17253	174	10352	97	39	10662	17253	
<b>Approach % Total %</b>	27.6	62.3	62.3	8.9	1.2	1.2	0	93.2	4.5	2.3	41.79	15.3	50.9	32.5	1.3	1.6	97.1	0.9	0.4	106.62	172.53	1.6	97.1	0.9	0.4	106.62	172.53	1.6	97.1	0.9	0.4	106.62	172.53	
<b>Total %</b>	2.6	9.4	5.8	0.8	0.1	0.1	0	22.6	1.1	0.6	24.2	0.7	2.3	1.5	4.6	1	60	0.6	0.2	61.8	111.8	1	60	0.6	0.2	61.8	111.8	1	60	0.6	0.2	61.8	111.8	

Start Time	Kalihi Street Southbound						Nimitz Highway Westbound						Kalihi Street Northbound						Nimitz Highway Eastbound											
	Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds	
	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total
06:45 AM	45	142	89	8	8	8	0	323	13	13	336	5	25	28	58	13	956	7	7	976	1512	5	323	13	13	956	7	7	976	1512
07:00 AM	42	125	75	8	8	8	0	362	16	16	378	11	40	26	77	10	1033	3	3	1046	1626	11	362	16	16	1033	3	3	1046	1626
07:15 AM	29	104	71	4	4	4	0	406	11	11	417	11	20	24	55	12	1061	2	2	1075	1651	11	406	11	11	1061	2	2	1075	1651
07:30 AM	45	158	94	19	19	19	0	371	22	22	393	13	37	21	71	16	929	10	10	955	1577	13	371	22	22	929	10	10	955	1577
<b>Total Volume</b>	161	529	329	39	39	39	0	1462	62	62	1524	40	122	99	261	51	3979	22	22	4052	6366	40	1462	62	62	3979	22	22	4052	6366
<b>% App. Total</b>	30.4	62.2	62.2	7.4	7.4	7.4	0	95.9	4.1	4.1	91.4	15.3	46.7	37.9	4.6	1.3	96.2	0.5	0.5	94.2	151.2	15.3	95.9	4.1	4.1	96.2	0.5	0.5	94.2	151.2
<b>PHF</b>	.894	.837	.875	.513	.513	.513	.000	.900	.705	.705	.914	.769	.763	.884	.847	.797	.938	.550	.550	.942	1.964	.797	.938	.550	.550	.938	.550	.550	.942	1.964

Peak Hour for Entire Intersection Begins at 06:45 AM  
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1

# Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400  
Honolulu, HI 96826

Counted By: DY, GC  
Counter: D4-5675, D4-3890  
Weather: Clear

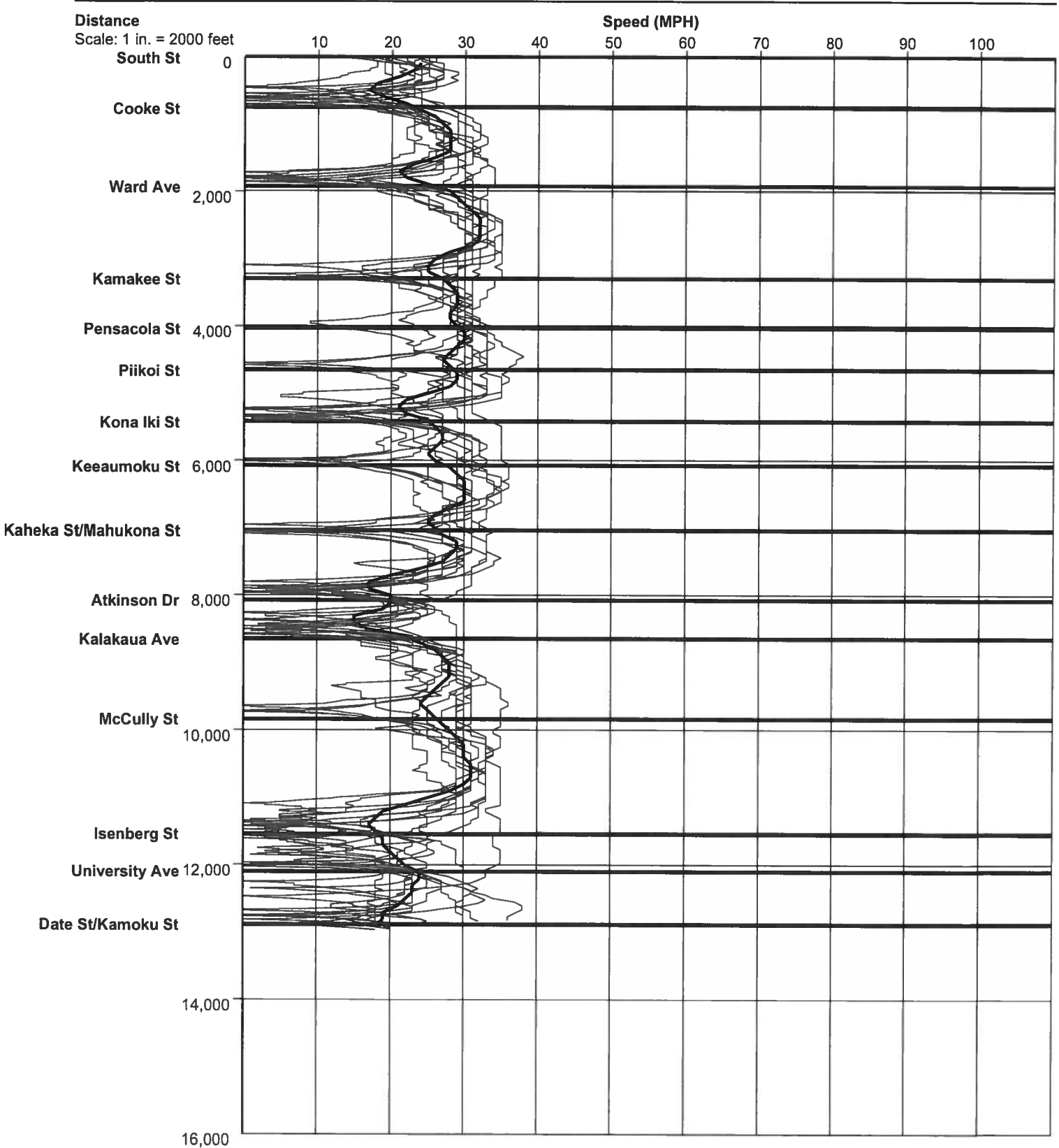
File Name : NimKal PM  
Site Code : 00000001  
Start Date : 10/15/2013  
Page No : 1

Groups Printed: Unshifted

Start Time	Kalihi Street Southbound						Nimitz Highway Westbound						Kalihi Street Northbound						Nimitz Highway Eastbound														
	Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds				
	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total			
03:00 PM	39	123	48	123	34	2	32	630	557	27	14	22	56	19	4	101	540	578	23	540	10	5	1432	23	540	10	5	1432	23	540	10	5	1432
03:15 PM	38	112	42	112	32	0	34	682	601	39	8	22	55	22	3	102	622	656	26	622	6	2	1552	26	622	6	2	1552	26	622	6	2	1552
03:30 PM	39	134	60	134	33	2	27	717	665	24	1	22	49	32	2	105	656	678	18	656	1	3	1634	18	656	1	3	1634	18	656	1	3	1634
03:45 PM	27	88	39	88	21	1	26	713	648	33	6	26	51	23	1	101	612	655	30	612	8	5	1557	30	612	8	5	1557	30	612	8	5	1557
Total	143	457	189	457	120	5	119	2742	2471	123	29	92	211	96	10	409	2430	2567	97	2430	25	15	6175	97	2430	25	15	6175	97	2430	25	15	6175
04:00 PM	20	94	43	94	27	4	24	709	658	25	2	14	53	27	1	95	668	699	23	668	2	6	1597	23	668	2	6	1597	23	668	2	6	1597
04:15 PM	26	80	33	80	21	0	28	737	679	26	4	6	53	31	1	91	680	709	23	680	1	5	1617	23	680	1	5	1617	23	680	1	5	1617
04:30 PM	29	84	28	84	23	4	15	699	653	29	2	13	61	11	2	87	684	712	21	684	2	5	1582	21	684	2	5	1582	21	684	2	5	1582
04:45 PM	31	90	38	90	20	1	17	720	671	32	0	13	50	17	1	81	673	703	21	673	5	4	1594	21	673	5	4	1594	21	673	5	4	1594
Total	106	348	142	348	91	9	84	2865	2661	112	8	46	217	86	5	354	2705	2823	88	2705	10	20	6390	88	2705	10	20	6390	88	2705	10	20	6390
05:00 PM	30	98	43	98	25	0	14	714	673	26	1	13	55	21	0	89	558	594	25	558	3	8	1495	25	558	3	8	1495	25	558	3	8	1495
05:15 PM	32	94	36	94	18	8	18	702	670	23	12	4	31	22	1	58	599	626	19	599	2	6	1533	19	599	2	6	1533	19	599	2	6	1533
05:30 PM	28	78	33	78	14	3	19	671	624	24	2	7	42	17	1	67	549	574	22	549	2	1	1435	22	549	2	1	1435	22	549	2	1	1435
05:45 PM	30	82	31	82	21	0	21	682	642	19	10	5	38	11	0	54	465	496	16	465	7	8	1364	16	465	7	8	1364	16	465	7	8	1364
Total	120	352	143	352	78	11	72	2917	2728	92	25	29	166	71	2	268	2171	2290	82	2171	14	23	5827	82	2171	14	23	5827	82	2171	14	23	5827
Grand Total	369	1157	474	1157	289	25	275	8524	7860	327	62	167	594	253	17	1031	7306	7680	267	7306	49	58	18392	267	7306	49	58	18392	267	7306	49	58	18392
Approach %	31.9		41		25	2.2	3.2		92.2	3.8	0.7	16.2		24.5	1.6		95.1		3.5		0.6	0.8		3.5		0.6	0.8		3.5		0.6	0.8	
Total %	2	6.3	2.6	6.3	1.6	0.1	1.5	46.3	42.7	1.8	0.3	0.9	3.2	1.4	0.1	5.6	39.7	41.8	1.5	39.7	0.3	0.3		1.5		0.3	0.3		1.5		0.3	0.3	

Start Time	Kalihi Street Southbound						Nimitz Highway Westbound						Kalihi Street Northbound						Nimitz Highway Eastbound														
	Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds		Left		Right		Peds				
	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total	Thru	App. Total			
03:30 PM	39	132	60	132	33	33	27	716	665	24	24	22	49	32	103	656	675	18	656	1	1	1626	18	656	1	1	1626	18	656	1	1	1626	
03:45 PM	27	87	39	87	21	21	26	707	648	33	33	26	51	23	100	612	650	30	612	8	8	1544	30	612	8	8	1544	30	612	8	8	1544	
04:00 PM	20	90	43	90	27	27	24	707	658	25	25	14	53	27	94	668	693	23	668	2	2	1584	23	668	2	2	1584	23	668	2	2	1584	
04:15 PM	26	80	33	80	21	21	28	733	679	26	26	6	53	31	90	680	704	23	680	1	1	1607	23	680	1	1	1607	23	680	1	1	1607	
Total Volume	112	389	175	389	102	102	105	2863	2650	108	108	68	206	113	387	2616	2722	94	2616	12	12	6361	94	2616	12	12	6361	94	2616	12	12	6361	
% App. Total	28.8		45		26.2	26.2	3.7		92.6	3.8	3.8	17.6		29.2	1.6		96.1		3.5		0.4	0.4		3.5		0.4	0.4		3.5		0.4	0.4	
PHF	.718		.729		.773	.773	.938	.976	.818	.818	.818	.654	.972	.883	.939	.962	.967	.783	.962	.375	.375	.978	.783	.962	.375	.375	.967	.783	.962	.375	.375	.978	

**Speed/Distance Profiles of All Runs**



Node #	Length	Node Names	10/15/2013 6:00 AM	10/15/2013 6:15 AM	10/15/2013 6:30 AM	10/15/2013 6:45 AM	10/15/2013 7:00 AM	10/15/2013 7:15 AM	10/15/2013 7:30 AM	10/15/2013 7:45 AM	10/15/2013 8:00 AM	10/15/2013 8:15 AM	10/15/2013 8:30 AM	10/15/2013 8:45 AM
1	0	South Street												
2	750	Cooke Street	25	22	23	35	58	82	62	54	60	85	65	21
3	1171	Ward Avenue	31	87	57	26	29	34	28	124	121	56	114	30
4	1374	Kamakee Street	31	35	30	32	35	33	32	53	52	33	35	63
5	735	Pensacola Street	25	16	15	17	19	16	19	18	18	17	20	18
6	620	Piikoi Street	19	14	44	15	14	14	15	13	13	45	19	12
7	766	Kona Iki Street	19	28	18	44	42	42	54	47	52	24	34	39
8	653	Keaauumoku Street	56	25	13	15	15	20	19	18	15	16	70	15
9	961	Kaheka Street/Mahukona Street	29	25	62	20	21	23	28	26	21	25	25	21
10	1038	Atkinson Drive	103	107	66	35	114	34	92	65	30	62	55	50
11	569	Kalakaua Avenue	75	14	75	56	67	76	62	47	39	62	54	41
12	1194	McCully Street	29	78	28	25	30	29	30	39	139	36	119	26
13	1707	Isenberg Street	42	70	36	94	56	64	50	115	65	47	45	34
14	554	University Avenue	24	14	20	113	41	43	27	90	18	32	17	11
15	784	Datei/Kamoku Street	18	17	26	22	133	105	141	15	149	102	123	92
Total	12876		526	552	513	553	674	591	659	724	806	619	795	473
<b>Number of Stops</b>														
1	0	South Street												
2	750	Cooke Street	0	0	0	1	1	1	1	1	1	1	1	0
3	1171	Ward Avenue	0	1	1	0	0	0	0	2	1	2	1	0
4	1374	Kamakee Street	0	0	0	0	0	0	0	1	1	0	0	0
5	735	Pensacola Street	0	0	0	0	0	0	0	0	0	0	0	0
6	620	Piikoi Street	0	0	1	0	0	0	0	0	0	1	0	0
7	766	Kona Iki Street	0	1	0	1	1	0	1	1	1	0	0	1
8	653	Keaauumoku Street	1	0	0	0	0	0	0	0	0	0	0	0
9	961	Kaheka Street/Mahukona Street	0	0	1	0	0	0	0	1	0	0	0	0
10	1038	Atkinson Drive	1	1	1	1	1	1	2	0	0	2	1	1
11	569	Kalakaua Avenue	1	0	1	2	1	1	1	2	1	1	1	1
12	1194	McCully Street	0	1	0	0	0	0	0	0	1	0	1	0
13	1707	Isenberg Street	0	1	0	4	1	1	1	4	1	0	0	0
14	554	University Avenue	1	0	0	3	1	1	1	1	0	1	0	0
15	784	Datei/Kamoku Street	0	0	0	0	1	1	2	0	2	1	1	1
Total	12876		4	5	5	12	7	6	9	13	9	9	7	5







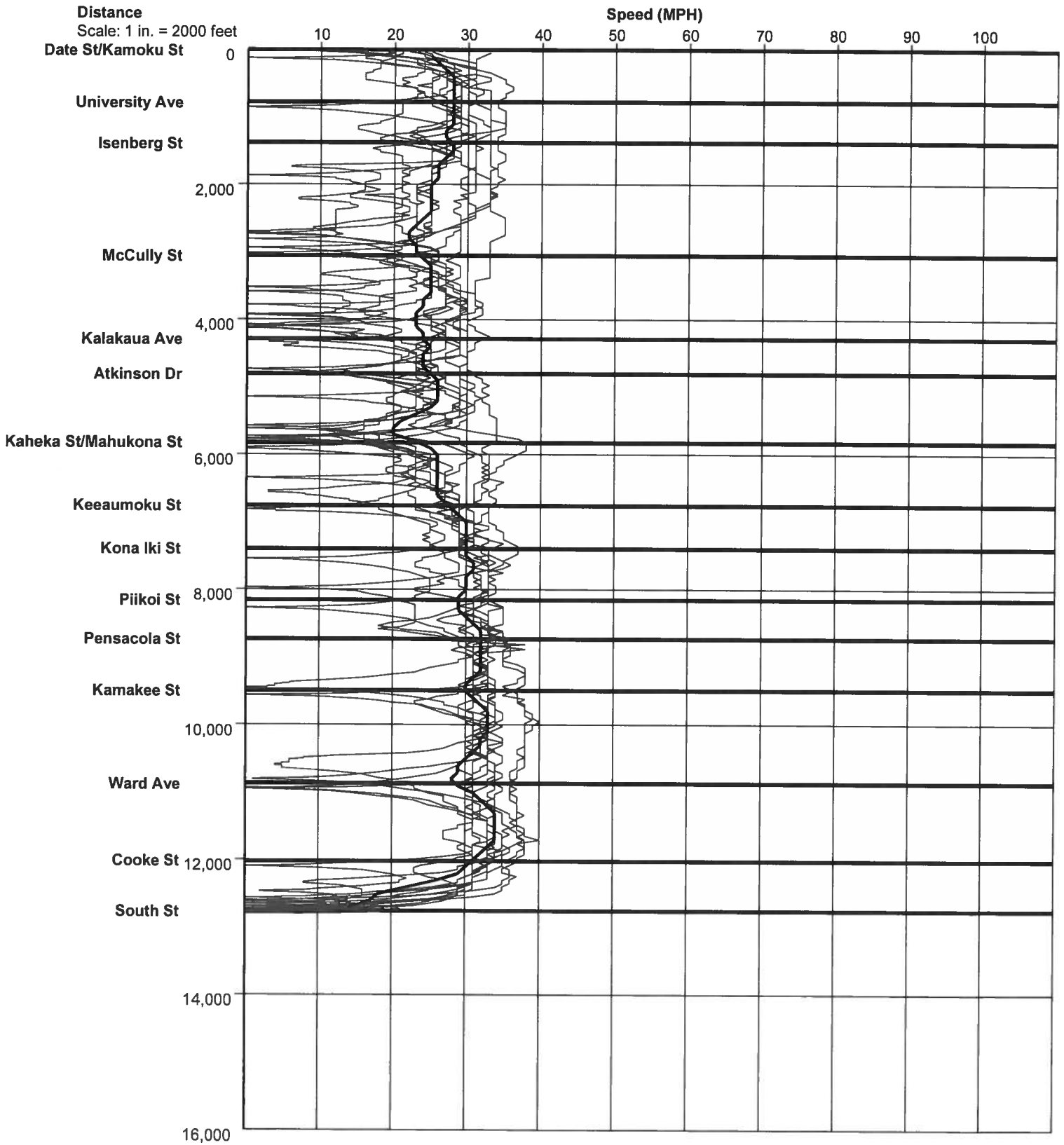


# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Study Name : Kapiolani WB AM  
Study Date : 1/21/2014

## Speed/Distance Profiles of All Runs



Node #	Length	Node Names	1/21/2014 6:00 AM	1/21/2014 6:15 AM	1/21/2014 6:30 AM	1/21/2014 6:45 AM	1/21/2014 7:00 AM	1/21/2014 7:15 AM	1/21/2014 7:30 AM	1/21/2014 7:45 AM	1/21/2014 8:00 AM	1/21/2014 8:15 AM	1/21/2014 8:30 AM	1/21/2014 8:45 AM
1	0	Date/Kamoku Street	17	19	21	21	24	20	23	22	28	19	117	21
2	771	University Avenue	12	16	13	12	17	12	15	14	21	16	45	14
3	606	Isenberg Street	37	46	41	34	40	49	134	136	103	46	68	91
4	1671	McCully Street	32	32	31	26	29	38	175	146	59	32	32	103
5	1232	Kalakaia Avenue	16	15	13	12	12	14	30	38	26	15	14	19
6	517	Atkinson Drive	43	36	40	62	22	22	62	28	70	36	57	27
7	1025	Kahaka Street/Mahukona Street	26	27	22	25	19	19	37	19	31	26	43	72
8	930	Keeaumoku Street	14	15	14	14	15	14	15	13	16	16	43	35
9	640	Kona Iki Street	16	15	16	16	16	19	19	15	16	16	54	32
10	755	Pikoi Street	14	12	11	12	13	13	13	12	13	12	47	18
11	577	Pensacola Street	16	15	16	16	17	17	16	16	16	14	16	62
12	765	Kamakee Street	28	25	28	29	29	80	32	31	28	25	32	56
13	1374	Ward Avenue	25	21	25	24	22	24	26	96	23	21	56	28
14	1148	Cooke Street	89	94	88	52	77	113	78	20	80	96	61	85
15	739	South Street	385	388	379	355	352	478	675	606	530	390	661	663
Total	12750													
<b>Number of Stops</b>														
1	0	Date/Kamoku Street	0	0	0	0	0	0	0	0	0	0	1	0
2	771	University Avenue	0	0	0	0	0	0	0	0	0	0	1	0
3	606	Isenberg Street	0	0	0	0	0	0	1	2	1	0	1	1
4	1671	McCully Street	0	0	0	0	0	0	3	3	2	0	0	1
5	1232	Kalakaia Avenue	0	0	0	0	0	0	2	1	0	0	0	0
6	517	Atkinson Drive	0	0	0	0	0	0	1	0	1	0	0	0
7	1025	Kahaka Street/Mahukona Street	1	0	1	1	0	1	1	0	0	0	1	0
8	930	Keeaumoku Street	0	0	0	0	0	0	0	0	0	0	0	1
9	640	Kona Iki Street	0	0	0	0	0	0	0	0	0	0	0	1
10	755	Pikoi Street	0	0	0	0	0	0	0	0	0	0	1	1
11	577	Pensacola Street	0	0	0	0	0	0	0	0	0	0	1	0
12	765	Kamakee Street	0	0	0	0	0	0	0	0	0	0	0	1
13	1374	Ward Avenue	0	0	0	0	0	2	0	0	0	0	0	1
14	1148	Cooke Street	0	0	0	0	0	0	0	1	0	0	1	0
15	739	South Street	1	1	1	1	1	1	2	1	1	1	1	1
Total	12750		2	1	2	2	1	4	10	8	5	1	9	8





Time Less Than 55 MPH		Date/Kamoku Street															Total
1	0	17	19	21	21	21	24	20	23	22	28	19	117	21			
2	771	12	16	13	13	17	17	12	15	14	21	16	45	14			
3	606	37	46	41	34	40	40	38	134	136	103	46	68	91			
4	1671	32	32	31	26	29	29	49	175	146	59	32	32	103			
5	1232	16	15	13	12	12	12	14	30	38	26	15	14	19			
6	517	43	36	40	62	22	22	43	62	28	70	36	57	27			
7	1025	26	27	22	22	19	19	19	37	19	31	26	43	72			
8	930	14	15	14	14	15	15	14	15	13	16	16	19	35			
9	640	16	15	16	16	16	16	19	19	15	16	16	54	32			
10	755	16	12	11	12	11	12	13	13	12	13	12	47	18			
11	577	16	15	16	16	17	17	17	16	16	16	15	16	62			
12	765	28	25	28	29	29	29	80	32	31	28	25	32	56			
13	1374	25	21	25	24	22	22	24	26	96	23	21	56	28			
14	1148	88	93	87	52	77	77	112	78	20	80	96	61	85			
15	739																
Total	12750	384	387	378	355	352	477	675	606	530	390	661	9.07	9.17			
Travel Time (min)		Date/Kamoku Street															Total
1	0	0.28	0.32	0.35	0.35	0.40	0.33	0.38	0.37	0.47	0.32	1.95	0.35				
2	771	0.20	0.27	0.22	0.20	0.28	0.20	0.25	0.23	0.35	0.27	0.75	0.23				
3	606	0.62	0.77	0.68	0.57	0.67	0.82	2.23	2.27	1.72	0.77	1.13	1.52				
4	1671	0.53	0.53	0.52	0.43	0.48	0.63	2.92	2.43	0.98	0.53	0.53	1.72				
5	1232	0.27	0.25	0.22	0.20	0.20	0.23	0.50	0.63	0.43	0.25	0.23	0.32				
6	517	0.72	0.60	0.67	1.03	0.37	0.72	1.03	0.47	1.17	0.60	0.95	0.45				
7	1025	0.43	0.45	0.37	0.42	0.32	0.32	0.62	0.32	0.52	0.43	0.72	1.20				
8	930	0.23	0.25	0.23	0.23	0.25	0.23	0.25	0.22	0.27	0.27	0.32	0.58				
9	640	0.27	0.25	0.27	0.27	0.27	0.32	0.32	0.25	0.27	0.27	0.90	0.53				
10	755	0.23	0.20	0.18	0.20	0.22	0.27	0.22	0.20	0.22	0.20	0.20	0.30				
11	577	0.27	0.25	0.27	0.27	0.28	0.28	0.27	0.27	0.27	0.23	0.78	1.03				
12	765	0.47	0.42	0.47	0.48	0.48	1.33	0.53	0.52	0.47	0.42	0.53	0.93				
13	1374	0.42	0.35	0.42	0.40	0.37	0.40	0.43	1.60	0.38	0.35	0.93	0.47				
14	1148	1.48	1.57	1.47	0.87	1.28	1.88	1.30	0.33	1.33	1.60	1.02	1.42				
15	739																
Total	12750	4.52	4.55	4.43	4.65	4.22	5.68	9.52	8.17	7.12	4.55	9.07	9.17				

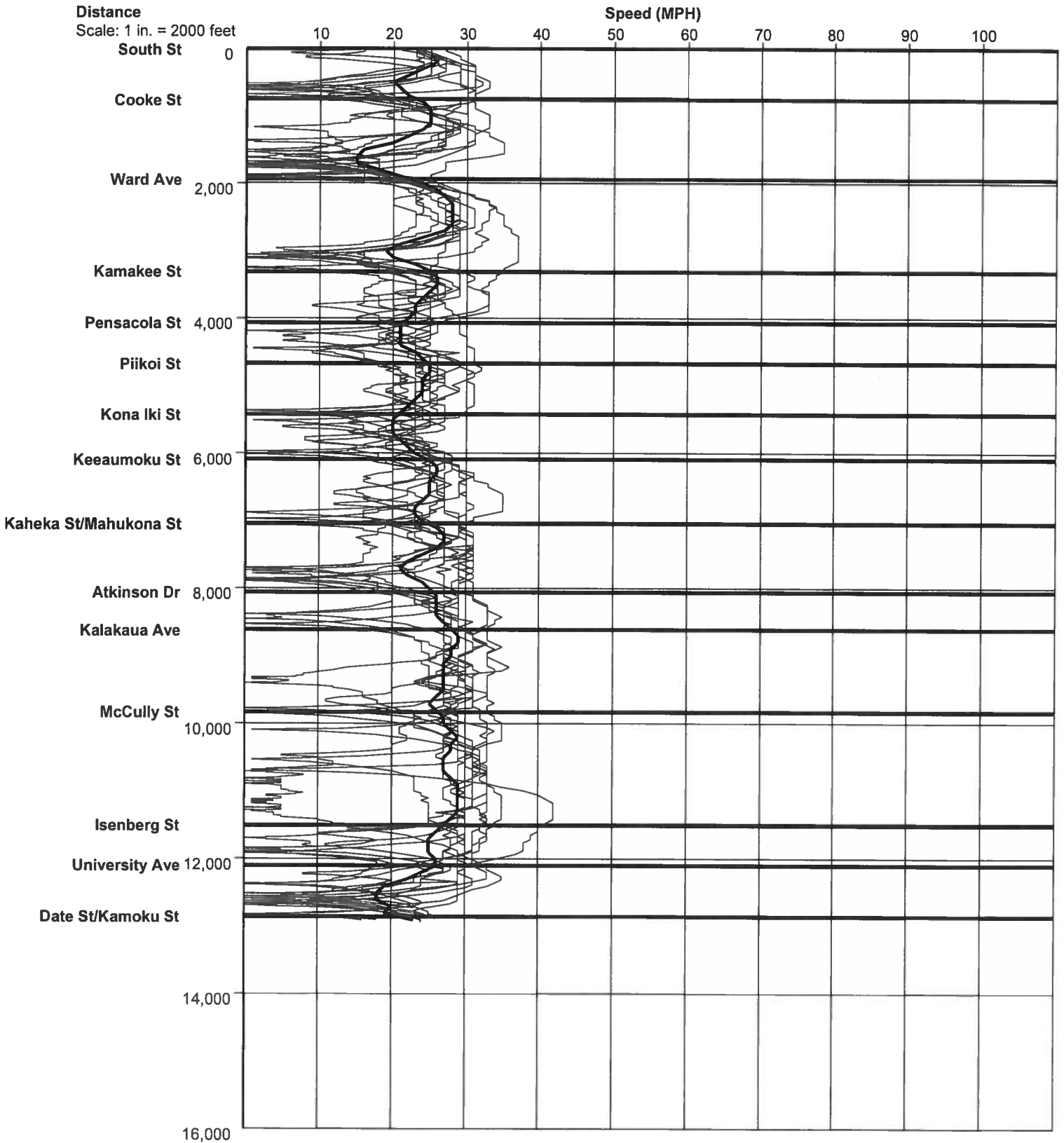


# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Study Name : Kapiolani EB PM  
Study Date : 10/15/2013

## Speed/Distance Profiles of All Runs



Node #	Length	Node Names	10/15/2013 3:00 PM	10/15/2013 3:15 PM	10/15/2013 3:30 PM	10/15/2013 3:45 PM	10/15/2013 4:00 PM	10/15/2013 4:15 PM	10/15/2013 4:30 PM	10/15/2013 4:45 PM	10/15/2013 5:00 PM	10/15/2013 5:15 PM	10/15/2013 5:30 PM	10/15/2013 5:45 PM
Travel Time														
1	0	South Street												
2	748	Cooke Street	52	19	19	84	82	85	68	30	77	18	79	18
3	1187	Ward Avenue	45	85	59	28	93	67	81	93	90	137	207	226
4	1371	Kamakee Street	55	38	53	37	36	65	56	40	54	56	45	28
5	759	Pensacola Street	20	17	23	21	21	26	21	21	28	25	28	16
6	599	Piikoi Street	13	19	18	17	27	30	20	18	18	33	34	19
7	754	Kona Iki Street	54	17	21	21	25	26	20	23	21	23	29	20
8	667	Keeaumoku Street	47	28	19	79	21	24	24	20	34	29	24	19
9	951	Kahaka Street/Mahukona Street	29	66	24	25	25	31	22	77	33	33	23	20
10	1017	Atkinson Drive	52	24	23	84	27	26	43	29	77	69	61	65
11	550	Kalakaau Avenue	46	12	13	15	14	11	15	59	61	14	14	14
12	1222	McCully Street	33	29	97	96	31	26	26	29	32	31	38	27
13	1674	Isenberg Street	40	58	38	265	103	44	45	36	41	37	40	40
14	593	University Avenue	13	68	12	16	14	11	14	62	14	96	20	14
15	754	Date/Kamoku Street	19	50	47	18	33	116	119	123	147	163	128	116
Total	12846		518	530	466	806	554	588	574	660	727	764	770	642
Number of Stops														
1	0	South Street												
2	748	Cooke Street	1	0	0	1	1	1	1	0	1	0	1	0
3	1187	Ward Avenue	1	1	1	0	1	1	2	1	1	2	3	3
4	1371	Kamakee Street	1	0	1	0	0	1	1	0	1	1	1	0
5	759	Pensacola Street	0	0	0	0	0	0	0	0	0	0	0	0
6	599	Piikoi Street	0	0	0	0	0	0	0	0	0	1	2	0
7	754	Kona Iki Street	1	0	0	0	0	0	0	0	0	0	1	0
8	667	Keeaumoku Street	1	0	0	1	0	0	0	0	1	0	0	0
9	951	Kahaka Street/Mahukona Street	0	1	0	0	0	0	0	1	0	0	0	0
10	1017	Atkinson Drive	1	0	0	1	0	0	0	1	1	2	1	1
11	550	Kalakaau Avenue	1	0	0	0	0	0	0	1	1	0	0	0
12	1222	McCully Street	0	0	1	2	0	0	0	0	0	0	0	0
13	1674	Isenberg Street	0	1	0	7	1	1	1	0	0	0	0	0
14	593	University Avenue	0	1	0	0	0	0	0	1	0	2	0	0
15	754	Date/Kamoku Street	0	1	1	0	1	1	1	1	2	2	1	1
Total	12846		7	6	4	12	4	6	7	5	8	10	10	5

Average Speed	0	10.1	27.2	28.1	6.3	6.3	28.8	6.3	28.1	6.3	6.1	7.8	17.2	6.6	29.3	6.7	29.3
1	0	10.1	27.2	28.1	6.3	6.3	28.8	6.3	28.1	6.3	6.1	7.8	17.2	6.6	29.3	6.7	29.3
2	748	18	9.7	13.7	28.8	8.6	25.1	26.1	13.7	8.6	12	9.8	8.8	9.1	5.8	3.9	3.5
3	1187	17	24.9	17.4	25.1	26.1	25.1	26.1	17.4	26.1	14.4	16.7	23.2	17.2	16.6	20.6	33.4
4	1371	26.7	29.8	22.4	25.1	22.8	22.8	22.8	22.4	22.8	19.8	25.4	24.4	18.4	21.5	18.8	31.9
5	759	30.2	20.9	22.1	23.8	15.3	23.8	15.3	22.1	23.8	14	19.9	23.3	23.4	12.3	11.9	21.8
6	599	9.6	30.4	25.7	24.4	20.8	24.4	20.8	25.7	24.4	19.6	25.5	21.7	23.6	21.8	17.3	25.6
7	754	9.7	16.9	23.1	5.9	21.6	5.9	21.6	23.1	5.9	18.5	20	23	13.5	15.7	19.1	24.2
8	667	22.1	9.7	27.3	25.6	25.3	25.6	25.3	27.3	25.6	21.1	29.6	8.5	19.4	19.6	28.7	32
9	951	13.5	28.7	30	8.3	26.4	8.3	26.4	30	8.3	27.5	15.5	24.4	9.2	19.2	11.2	10.8
10	1017	8.3	32.4	29.2	25.7	27.4	25.7	27.4	29.2	25.7	33	25.5	5.9	6	26.4	27.5	27.9
11	550	25.2	28.3	8.5	8.6	26.1	8.6	26.1	8.5	8.6	32	32.1	29.1	26.7	27.3	21.9	30
12	1222	28.8	19.6	30.7	4.3	11.1	4.3	11.1	30.7	4.3	26.3	25.2	31.6	28	30.8	28.7	28.7
13	1674	29.5	6	31.8	25	30.2	25	30.2	31.8	25	36.1	29.1	6.6	27.3	4.2	19.8	28.6
14	593	27.6	10.1	10.5	27.8	15.2	27.8	15.2	10.5	27.8	4.3	4.2	3.4	3.5	3.1	4.1	4.3
15	754	17	16.5	18.8	10.8	15.8	10.8	15.8	18.8	10.8	14.9	15.3	13.2	12.1	11.5	11.4	13.6
Total	12846	293	308	245	584	331	584	331	245	584	365	351	438	504	541	547	420
Total Delay	0	39	6	6	71	69	71	69	6	71	72	55	17	64	5	66	5
1	0	39	6	6	71	69	71	69	6	71	72	55	17	64	5	66	5
2	748	24	64	38	7	73	7	73	38	7	47	61	72	69	117	186	206
3	1187	31	14	29	13	13	13	13	29	13	41	32	16	30	33	22	4
4	1371	6	4	10	8	10	8	10	10	8	13	7	8	15	12	15	3
5	759	2	9	8	7	16	7	16	8	7	19	10	7	7	22	24	3
6	599	41	4	8	8	12	8	12	8	8	13	7	10	8	10	16	7
7	754	35	16	8	67	9	67	9	8	67	13	12	8	22	17	12	7
8	667	13	50	8	9	9	9	9	8	9	15	5	60	17	17	6	4
9	951	34	7	6	67	9	67	9	6	67	8	26	11	59	51	43	47
10	1017	36	2	3	5	4	5	4	3	5	1	5	50	52	4	4	4
11	550	12	8	76	75	10	75	10	76	75	5	5	8	11	10	17	6
12	1222	11	29	9	236	74	236	74	9	236	15	16	7	12	8	11	11
13	1674	3	58	2	6	3	6	3	2	6	0	4	52	4	85	10	4
14	593	6	37	34	5	20	5	20	34	5	103	106	112	134	150	115	103
15	754	293	308	245	584	331	584	331	245	584	365	351	438	504	541	547	420
Total	12846	293	308	245	584	331	584	331	245	584	365	351	438	504	541	547	420



Contraflow - Kapiolani Boulevard Eastbound PM

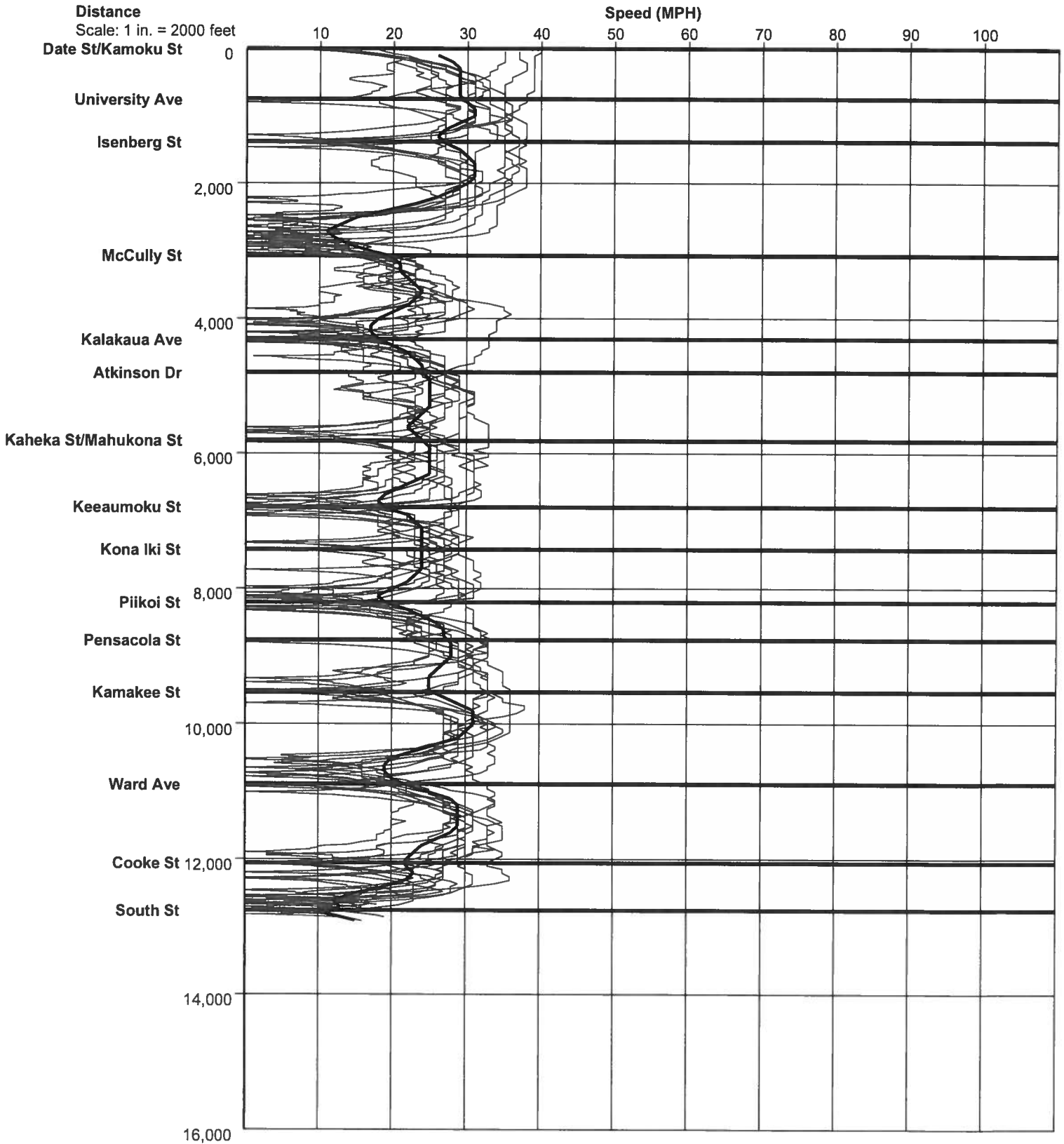
Time Less Than 55 MPH		South Street	52	19	19	84	82	85	68	30	77	18	79	18
1	0													
2	748	Cooke Street	45	85	28	82	93	67	81	93	90	137	207	226
3	1187	Ward Avenue	55	38	37	36	36	65	56	40	54	56	45	28
4	1371	Kamakee Street	20	17	23	21	23	26	21	21	28	28	28	16
5	759	Pensacola Street	13	19	17	17	27	30	20	18	18	33	34	19
6	599	Piikoi Street	54	17	21	21	25	26	20	23	21	23	29	20
7	754	Kona Iki Street	47	28	19	79	21	31	24	20	34	29	24	19
8	667	Keeaumoku Street	29	66	24	25	25	31	22	77	33	33	23	20
9	951	Kahaka Street/Mahukona Street	52	24	23	84	27	26	43	29	77	69	61	65
10	1017	Atkinson Drive	46	12	13	15	14	11	15	59	61	14	14	14
11	550	Kalakaua Avenue	33	29	97	96	31	26	26	29	32	31	38	27
12	1222	McCully Street	40	58	38	265	103	44	45	36	41	37	40	40
13	1674	Isenberg Street	13	68	12	16	14	11	14	62	14	96	20	14
14	593	University Avenue	19	50	46	17	33	115	118	122	147	163	128	115
15	754	Date/Kamoku Street												
Total	12846		518	530	465	805	554	587	573	659	727	764	770	641
Travel Time (min)		South Street	0.87	0.32	1.40	1.37	1.42	1.13	0.50	1.28	0.30	1.32	0.30	
1	0													
2	748	Cooke Street	0.75	1.42	0.47	1.55	1.12	1.35	1.55	1.50	1.28	2.28	3.45	3.77
3	1187	Ward Avenue	0.92	0.63	0.62	0.60	1.08	0.93	0.67	0.90	0.90	0.93	0.75	0.47
4	1371	Kamakee Street	0.33	0.28	0.35	0.38	0.43	0.35	0.35	0.35	0.47	0.42	0.47	0.27
5	759	Pensacola Street	0.22	0.32	0.30	0.28	0.50	0.33	0.33	0.30	0.30	0.55	0.57	0.32
6	599	Piikoi Street	0.90	0.28	0.35	0.42	0.43	0.33	0.38	0.38	0.35	0.38	0.48	0.33
7	754	Kona Iki Street	0.78	0.47	1.32	0.35	0.40	0.40	0.40	0.33	0.57	0.48	0.40	0.32
8	667	Keeaumoku Street	0.48	1.10	0.42	0.42	0.52	0.37	1.28	1.28	0.55	0.55	0.38	0.33
9	951	Kahaka Street/Mahukona Street	0.87	0.40	1.40	0.45	0.43	0.72	0.48	0.48	1.28	1.15	1.02	1.08
10	1017	Atkinson Drive	0.77	0.20	0.25	0.23	0.18	0.25	0.98	1.02	1.02	0.23	0.23	0.23
11	550	Kalakaua Avenue	0.55	0.48	1.60	0.52	0.43	0.43	0.48	0.53	0.53	0.52	0.63	0.45
12	1222	McCully Street	0.67	0.97	4.42	1.72	0.73	0.75	0.60	0.68	0.68	0.62	0.67	0.67
13	1674	Isenberg Street	0.22	1.13	0.27	0.23	0.18	0.23	1.03	1.03	0.23	1.60	0.33	0.23
14	593	University Avenue	0.32	0.83	0.78	0.55	1.93	1.98	2.05	2.05	2.45	2.72	2.13	1.93
15	754	Date/Kamoku Street												
Total	12846		8.10	6.87	6.78	12.87	8.45	7.68	7.35	7.92	9.43	8.42	10.37	8.53

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Study Name : Kapiolani WB PM  
Study Date : 10/15/2013

## Speed/Distance Profiles of All Runs





Node #	Length	Node Names	10/15/2013 3:00 PM	10/15/2013 3:15 PM	10/15/2013 3:30 PM	10/15/2013 3:45 PM	10/15/2013 4:00 PM	10/15/2013 4:15 PM	10/15/2013 4:30 PM	10/15/2013 4:45 PM	10/15/2013 5:00 PM	10/15/2013 5:15 PM	10/15/2013 5:30 PM	10/15/2013 5:45 PM
1	0	Date/Kamoku Street												
2	745	University Avenue	18	21	22	14	22	22	22	22	23	14	23	30
3	633	Isenberg Street	18	13	48	12	14	12	16	47	16	11	45	90
4	1686	McCully Street	130	418	184	133	95	100	194	185	114	75	178	259
5	1239	Kalaka'ua Avenue	58	32	88	96	82	87	91	78	38	38	75	78
6	489	Aikinson Drive	35	11	14	19	26	14	15	18	51	72	22	15
7	1016	Kahaka Street/Mahukona Street	22	27	68	49	57	24	39	32	33	24	37	27
8	980	Keeaumoku Street	22	75	28	31	29	22	28	72	71	24	68	61
9	628	Kona Iki Street	72	20	40	65	75	17	41	21	18	71	20	18
10	780	Piikoi Street	19	68	23	22	71	52	24	62	17	21	59	58
11	557	Pensacola Street	63	18	16	48	17	17	12	19	63	62	19	17
12	771	Kamakee Street	17	25	47	19	27	31	46	45	16	19	17	18
13	1357	Ward Acenue	29	50	100	77	74	43	105	87	64	50	41	30
14	1169	Cooke Street	91	63	31	36	89	43	29	29	31	87	29	23
15	699	South Street	33	72	155	210	57	97	52	74	70	76	39	52
Total	12749		627	913	864	831	735	591	714	791	625	644	672	776
<b>Number of Stops</b>														
1	0	Date/Kamoku Street												
2	745	University Avenue	0	0	0	0	0	0	0	0	0	0	0	0
3	633	Isenberg Street	0	0	1	0	0	0	0	1	0	0	1	1
4	1686	McCully Street	2	5	3	2	3	1	3	3	1	1	1	5
5	1239	Kalaka'ua Avenue	1	0	1	1	1	1	1	1	0	0	1	1
6	489	Aikinson Drive	0	0	0	0	1	0	0	0	1	1	0	0
7	1016	Kahaka Street/Mahukona Street	0	0	1	2	1	0	1	0	0	0	0	0
8	980	Keeaumoku Street	0	1	0	1	0	0	0	1	1	0	1	1
9	628	Kona Iki Street	1	0	1	1	1	0	1	0	0	1	0	0
10	780	Piikoi Street	0	1	0	0	2	1	0	1	0	0	1	1
11	557	Pensacola Street	1	0	0	1	0	0	0	0	1	1	0	0
12	771	Kamakee Street	0	0	1	0	1	1	1	1	0	0	0	0
13	1357	Ward Acenue	0	1	1	1	0	1	1	1	1	1	0	0
14	1169	Cooke Street	1	1	0	0	1	1	0	0	0	2	0	0
15	699	South Street	1	1	2	3	1	1	1	1	2	1	1	1
Total	12749		7	10	11	12	12	7	9	10	7	8	6	10

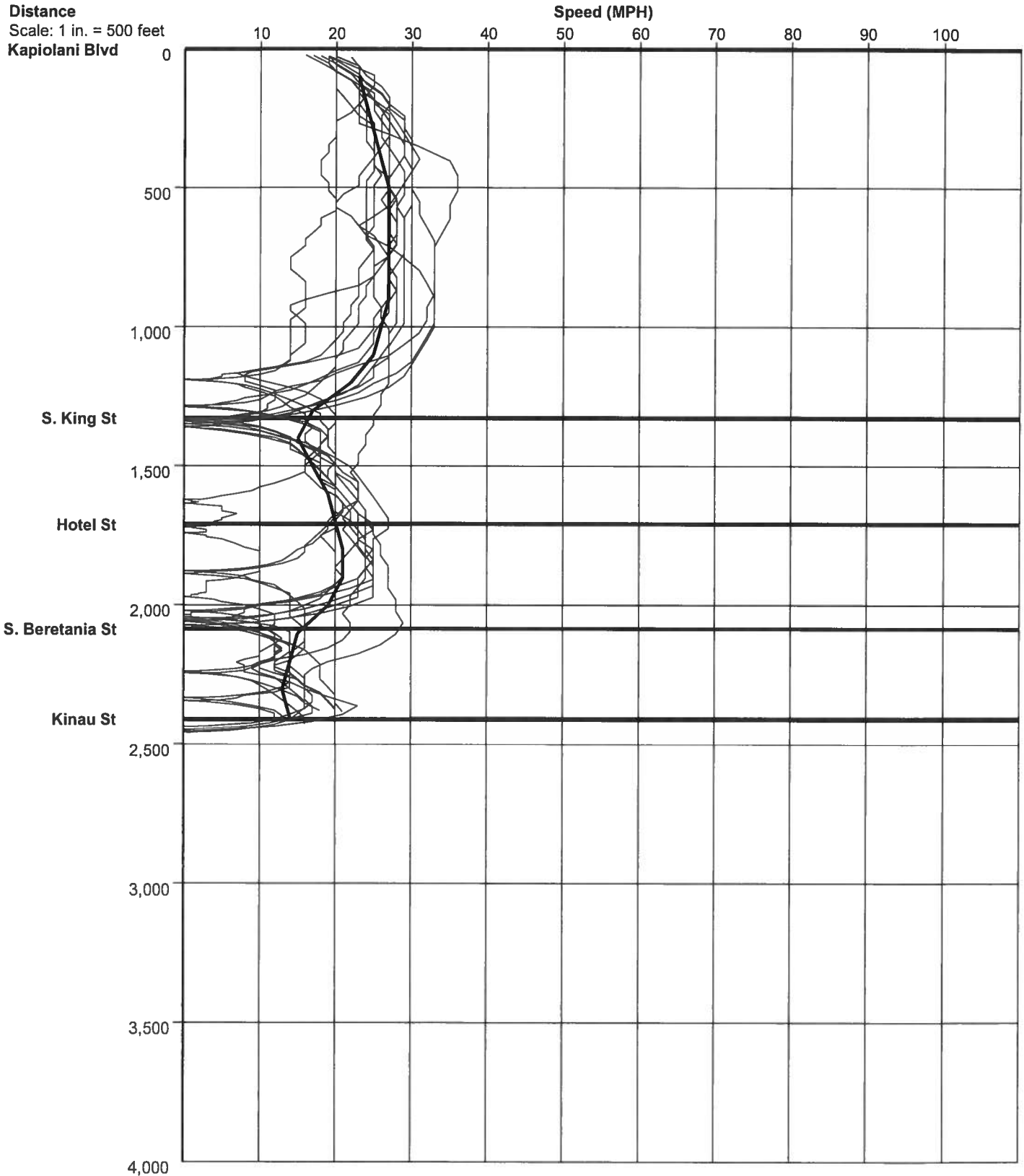




Contraflow - Kapiolani Boulevard Westbound PM

Time Less Than 55 MPH		Date/Kamoku Street																		
1	0	18	21	22	14	22	22	22	22	22	22	22	22	22	22	22	23	14	23	30
2	745	18	13	48	12	14	14	14	14	14	14	14	14	14	14	14	16	11	45	90
3	633	130	418	184	133	95	95	95	95	95	95	95	95	95	95	95	114	75	178	259
4	1686	58	32	88	96	82	82	82	82	82	82	82	82	82	82	82	38	38	75	78
5	1239	35	11	14	19	26	26	26	26	26	26	26	26	26	26	26	51	72	22	15
6	489	22	27	68	49	57	57	57	57	57	57	57	57	57	57	57	33	24	37	27
7	1016	22	75	28	31	29	29	29	29	29	29	29	29	29	29	29	71	24	68	61
8	980	72	20	40	65	75	75	75	75	75	75	75	75	75	75	75	18	21	20	18
9	628	19	68	23	22	71	71	71	71	71	71	71	71	71	71	71	17	21	59	58
10	780	63	18	16	48	17	17	17	17	17	17	17	17	17	17	17	63	62	19	17
11	557	17	25	47	19	27	27	27	27	27	27	27	27	27	27	27	45	19	17	18
12	771	29	50	100	77	74	74	74	74	74	74	74	74	74	74	74	64	50	41	30
13	1357	91	63	31	36	89	89	89	89	89	89	89	89	89	89	89	29	87	29	23
14	1169	33	71	154	210	57	57	57	57	57	57	57	57	57	57	57	70	76	39	51
15	699	627	912	863	831	735	735	735	735	735	735	735	735	735	735	735	625	644	672	775
Total	12749	627	912	863	831	735	735	735	735	735	735	735	735	735	735	735	625	644	672	775
Travel Time (min)		Date/Kamoku Street																		
1	0	0.30	0.35	0.37	0.23	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.23	0.38	0.50
2	745	0.30	0.22	0.80	0.20	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.27	0.18	0.75	1.50
3	633	2.17	6.97	3.07	2.22	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	3.23	1.25	2.97	4.32
4	1686	0.97	0.53	1.47	1.60	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.52	0.63	1.25	1.30
5	1239	0.58	0.18	0.23	0.32	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.25	1.20	0.37	0.25
6	489	0.37	0.45	1.13	0.82	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.65	1.20	0.37	0.25
7	1016	0.37	1.25	0.47	0.52	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.47	0.40	0.62	0.45
8	980	1.20	0.33	0.67	1.08	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	0.68	1.18	1.13	1.02
9	628	0.32	1.13	0.38	0.37	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	0.33	0.30	0.33	0.30
10	780	1.05	0.30	0.27	0.80	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.20	1.03	0.98	0.97
11	557	0.28	0.42	0.78	0.32	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.20	1.03	0.32	0.28
12	771	0.48	0.83	1.67	1.28	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	0.77	0.32	0.28	0.30
13	1357	1.52	1.05	0.52	0.60	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.75	0.83	0.68	0.50
14	1169	0.55	1.20	2.58	3.50	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.48	1.45	0.48	0.38
15	699	8.38	12.97	11.30	9.75	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	0.87	1.27	0.65	0.87
Total	12749	8.38	12.97	11.30	9.75	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	9.82	10.55	8.02	10.07	11.68

**Speed/Distance Profiles of All Runs**



Contraflow - Ward Avenue Northbound AM

Node #	Length	Node Names	10/15/2013 6:00 AM	10/15/2013 6:15 AM	10/15/2013 6:30 AM	10/15/2013 6:45 AM	10/15/2013 7:00 AM	10/15/2013 7:15 AM	10/15/2013 7:30 AM	10/15/2013 7:45 AM	10/15/2013 8:00 AM	10/15/2013 8:15 AM	10/15/2013 8:30 AM	10/15/2013 8:45 AM
<b>Travel Time</b>														
1	0	Kapiolani Boulevard	36	37	43	37	46	76	33	44	57	37	66	45
2	1326	S. King Street	45	52	37	24	15	14	36	31	13	11	53	13
3	380	Hotel Street	10	68	69	67	66	73	11	69	67	63	131	72
4	377	S. Beretania Street	12	14	13	15	13	75	73	17	73	15	18	27
5	367	Kinau Street												
Total	2450		103	171	162	143	140	238	153	161	210	126	268	157
<b>Number of Stops</b>														
1	0	Kapiolani Boulevard	0	0	1	0	1	1	0	1	1	0	1	0
2	1326	S. King Street	1	1	0	1	0	0	1	0	0	0	2	0
3	380	Hotel Street	0	1	1	1	1	1	0	1	1	1	1	1
4	377	S. Beretania Street	0	0	0	0	0	1	1	0	1	0	0	1
5	367	Kinau Street												
Total	2450		1	2	2	2	2	3	2	2	3	1	4	2
<b>Average Speed</b>														
1	0	Kapiolani Boulevard	25.3	24.4	21	24.5	19.7	12.1	27.7	20.6	15.9	24.9	13.9	20.4
2	1326	S. King Street	5.6	5.3	7.3	11.2	18.3	18.9	7.4	9	19.5	23.3	4.7	19.8
3	380	Hotel Street	27.1	3.7	3.6	3.7	3.8	3.5	2	3.5	3.8	3.9	1.9	3.4
4	377	S. Beretania Street	17.3	14.6	16.9	13.6	15.7	2.8	2.7	12.6	3.1	14.6	12.6	8.7
5	367	Kinau Street												
Total	2450		15.9	9.5	10.1	11.4	11.6	6.9	10.7	10.2	7.8	13	6.1	10.6
<b>Total Delay</b>														
1	0	Kapiolani Boulevard	13	14	20	14	23	53	10	21	34	14	43	22
2	1326	S. King Street	39	45	30	17	8	7	29	24	6	4	46	6
3	380	Hotel Street	3	61	63	60	59	66	4	62	61	57	125	66
4	377	S. Beretania Street	6	9	7	10	8	69	67	11	67	9	12	21
5	367	Kinau Street												
Total	2450		61	129	120	101	98	195	110	118	168	84	226	115
<b>Time Less Than 0 MPH</b>														
1	0	Kapiolani Boulevard	0	0	0	0	6	27	0	0	0	0	16	0
2	1326	S. King Street	24	30	19	6	0	0	19	11	0	0	18	0
3	380	Hotel Street	0	52	51	50	39	51	0	50	44	44	75	50
4	377	S. Beretania Street	0	0	0	0	0	55	55	0	52	0	0	2
5	367	Kinau Street												
Total	2450		24	82	70	56	45	133	74	61	96	44	109	52





# Wilson Okamoto Corporation

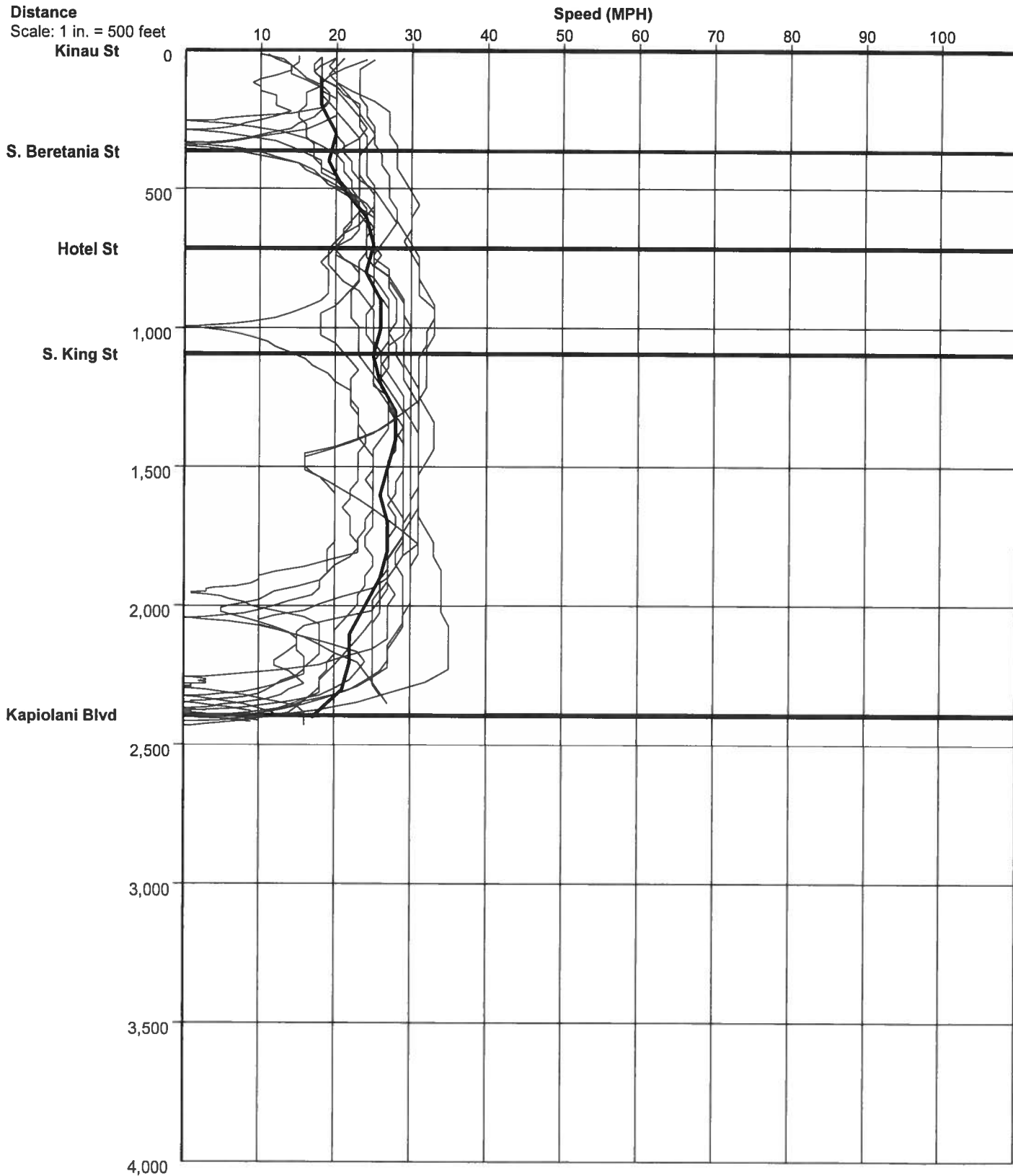
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Ward SB AM

Study Date : 12/11/2014

## Speed/Distance Profiles of All Runs



Node #	Length	Node Names	10/15/2013 6:00 AM	10/15/2013 6:15 AM	10/15/2013 6:30 AM	10/15/2013 6:45 AM	10/15/2013 7:00 AM	10/15/2013 7:15 AM	10/15/2013 7:30 AM	10/15/2013 7:45 AM	10/15/2013 8:00 AM	10/15/2013 8:15 AM	10/15/2013 8:30 AM	10/15/2013 8:45 AM
<b>Travel Time</b>														
1	0	Kinau Street		15	11	13	12	11	13	67	12	75	50	62
2	362	S. Beretania Street	12	12	10	10	10	8	11	12	9	12	10	12
3	351	Hotel Street	11	10	10	10	9	8	12	13	8	11	10	9
4	379	S. King Street	44	35	33	104	32	77	35	146	53	152	29	98
5	1300	Kapiolani Boulevard	43											
Total	2392		110	72	64	137	63	104	71	238	82	250	99	181
<b>Number of Stops</b>														
1	0	Kinau Street												
2	362	S. Beretania Street	0	0	0	0	0	0	0	1	0	1	1	1
3	351	Hotel Street	0	0	0	0	0	0	0	0	0	0	1	0
4	379	S. King Street	1	0	0	0	0	0	0	0	0	0	0	0
5	1300	Kapiolani Boulevard	1	1	0	1	0	1	0	2	1	2	0	1
Total	2392		2	1	0	1	0	1	0	3	1	3	2	2
<b>Average Speed</b>														
1	0	Kinau Street												
2	362	S. Beretania Street	21.7	16.6	23.7	19.3	21.7	23.9	19.9	3.8	21.4	3.4	5.1	4.1
3	351	Hotel Street	21.8	21.7	23.1	25.1	24.5	29.6	20.8	20.4	28.1	20.7	23.1	21
4	379	S. King Street	5.8	26	25.9	24.7	27.1	31.9	23.2	20.5	32	22.2	28.2	27.8
5	1300	Kapiolani Boulevard	20.4	24.7	26.9	8.5	27	11.4	24.9	6	16	5.8	29.8	9.1
Total	2392		14.8	22.7	25.6	11.9	25.6	15.7	23.1	6.9	19.8	6.5	16.5	9.1
<b>Total Delay</b>														
1	0	Kinau Street												
2	362	S. Beretania Street	6	9	4	7	5	4	7	61	6	69	44	56
3	351	Hotel Street	5	5	4	4	4	2	5	6	2	6	4	6
4	379	S. King Street	37	3	3	3	2	1	5	6	1	4	3	2
5	1300	Kapiolani Boulevard	21	13	11	82	10	55	13	124	31	130	7	76
Total	2392		69	30	22	96	21	62	30	197	40	209	58	140
<b>Time Less Than 0 MPH</b>														
1	0	Kinau Street												
2	362	S. Beretania Street	0	0	0	0	0	0	0	42	0	49	29	39
3	351	Hotel Street	0	0	0	0	0	0	0	0	0	0	0	0
4	379	S. King Street	20	0	0	0	0	0	0	0	0	0	0	0
5	1300	Kapiolani Boulevard	0	0	0	52	0	28	0	79	5	93	0	36
Total	2392		20	0	0	52	0	28	0	121	5	142	29	75

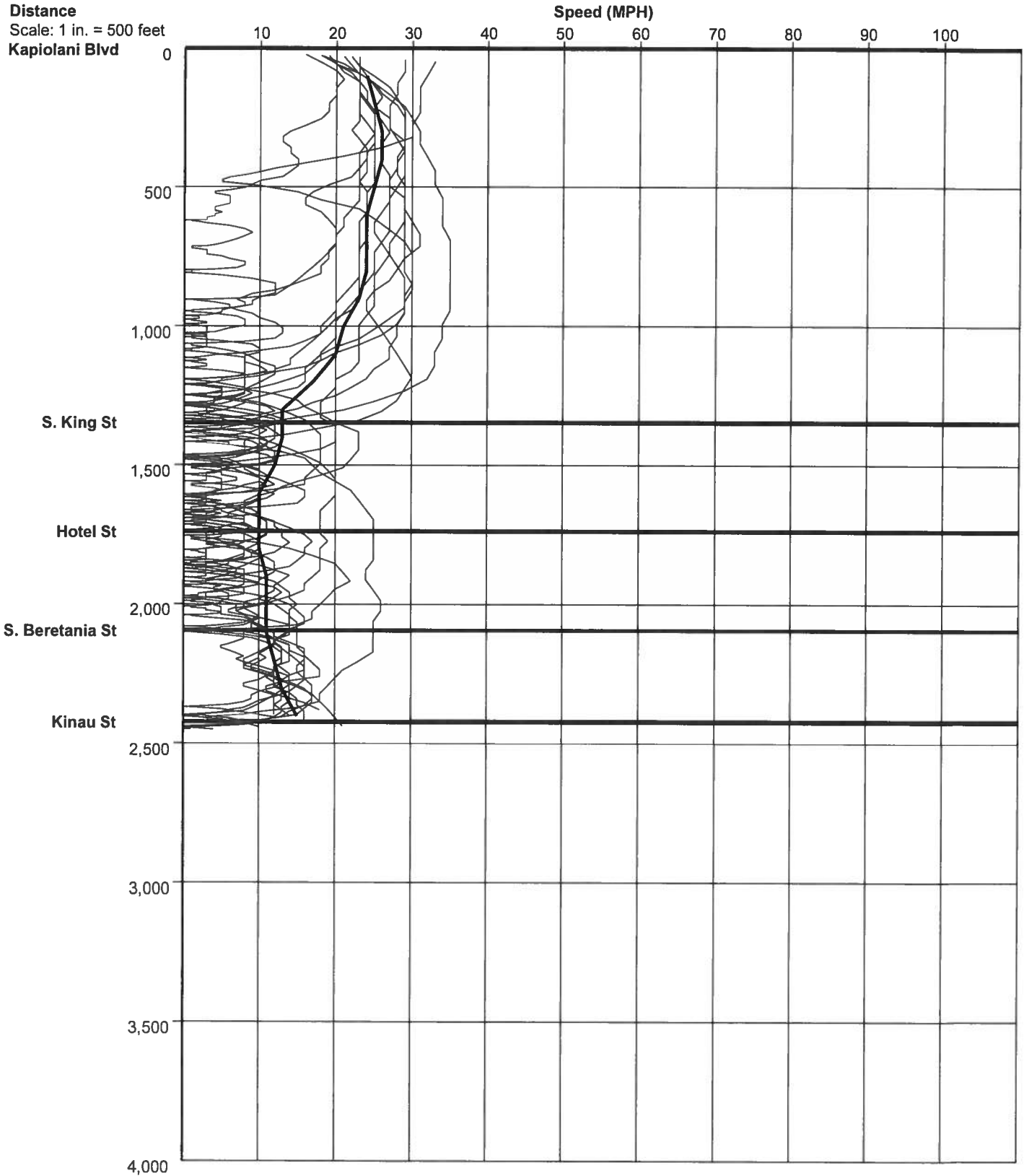


# Wilson Okamoto Corporation

1907 S. Beretania St, Suite 400  
Honolulu, HI 96826

Study Name : **Ward NB PM**  
Study Date : **12/11/2014**

## Speed/Distance Profiles of All Runs



Node #	Length	Node Names	10/15/2013 3:00 PM	10/15/2013 3:15 PM	10/15/2013 3:30 PM	10/15/2013 3:45 PM	10/15/2013 4:00 PM	10/15/2013 4:15 PM	10/15/2013 4:30 PM	10/15/2013 4:45 PM	10/15/2013 5:00 PM	10/15/2013 5:15 PM	10/15/2013 5:30 PM	10/15/2013 5:45 PM
<b>Travel Time</b>														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	34	49	43	78	39	71	46	335	223	522	345	32
3	390	Hotel Street	66	19	59	29	43	121	99	213	118	110	96	171
4	357	S. Beretania Street	9	78	21	77	123	80	86	145	161	171	108	83
5	329	Kinaiu Street	11	19	73	15	19	71	79	19	14	19	71	22
Total	2421		120	165	196	199	224	343	310	712	516	822	620	308
<b>Number of Stops</b>														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	0	1	0	1	0	1	1	2	4	3	8	0
3	390	Hotel Street	1	0	1	1	2	2	4	5	4	2	2	3
4	357	S. Beretania Street	0	1	1	1	2	1	2	2	3	3	3	1
5	329	Kinaiu Street	0	0	0	0	1	1	1	0	0	0	1	1
Total	2421		1	2	2	3	5	5	8	9	11	8	14	5
<b>Average Speed</b>														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	27.4	18.7	21.4	11.9	23.7	13	20	2.7	4.1	1.8	2.7	28.8
3	390	Hotel Street	4.1	14.3	4.5	9	6	2.2	2.7	1.2	2.2	2.4	2.7	1.6
4	357	S. Beretania Street	25	3.1	11.3	3.2	2	3.1	2.7	1.7	1.5	1.5	2.3	3
5	329	Kinaiu Street	20.8	11.6	3.1	14.6	12.1	3.1	2.7	11.8	14.8	11.1	3.1	10.2
Total	2421		13.8	10	8.4	8.3	7.4	4.8	5.3	2.3	3.1	2	2.6	5.4
<b>Total Delay</b>														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	11	26	20	55	16	48	23	312	200	499	322	9
3	390	Hotel Street	59	12	52	22	36	114	92	206	111	103	89	164
4	357	S. Beretania Street	3	72	15	71	117	74	80	139	155	165	102	77
5	329	Kinaiu Street	5	13	67	9	13	65	73	13	9	13	65	16
Total	2421		78	123	154	157	182	301	268	670	475	780	578	266
<b>Time Less Than 0 MPH</b>														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	0	4	0	26	0	16	0	252	138	396	194	0
3	390	Hotel Street	48	0	37	0	7	78	41	146	56	68	34	120
4	357	S. Beretania Street	0	48	0	50	99	49	54	103	110	112	49	50
5	329	Kinaiu Street	0	0	53	0	0	47	53	0	0	0	47	0
Total	2421		48	52	90	76	106	190	148	501	304	576	324	170





# Wilson Okamoto Corporation

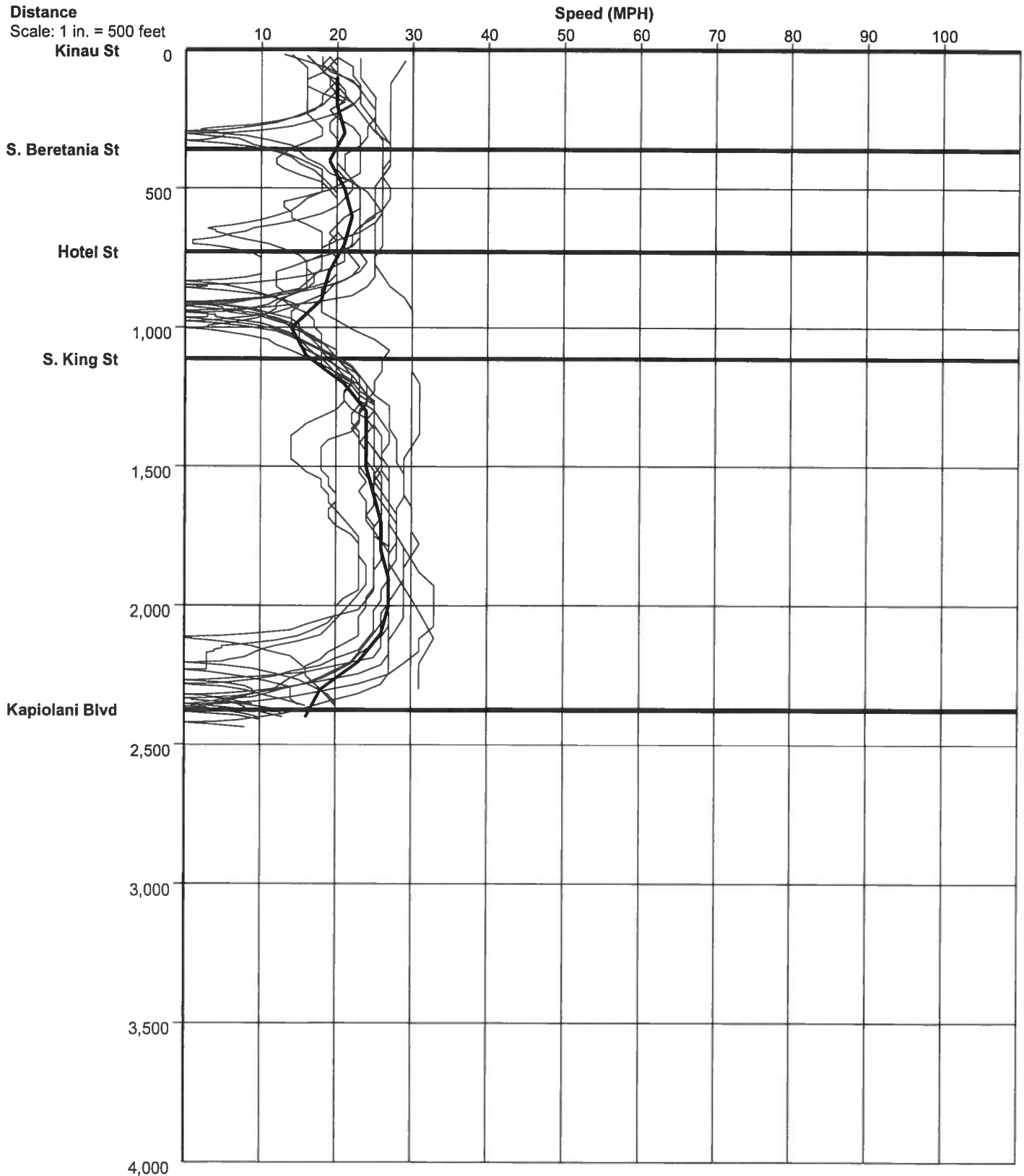
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Ward SB PM

Study Date : 12/11/2014

## Speed/Distance Profiles of All Runs



Node #	Length	Node Names	10/15/2013 3:00 PM	10/15/2013 3:15 PM	10/15/2013 3:30 PM	10/15/2013 3:45 PM	10/15/2013 4:00 PM	10/15/2013 4:15 PM	10/15/2013 4:30 PM	10/15/2013 4:45 PM	10/15/2013 5:00 PM	10/15/2013 5:15 PM	10/15/2013 5:30 PM	10/15/2013 5:45 PM
<b>Travel Time</b>														
1	0	Kinau Street												
2	359	S. Beretania Street	75	11	16	12	13	10	11	69	60	11	13	13
3	367	Hotel Street	11	10	14	10	11	10	29	14	23	10	12	14
4	385	S. King Street	9	69	71	70	66	67	52	12	71	60	66	62
5	1262	Kapiolani Boulevard	85	39	47	94	64	34	54	80	78	31	102	63
Total	2373		180	129	148	186	154	121	146	175	232	112	193	152
<b>Number of Stops</b>														
1	0	Kinau Street												
2	359	S. Beretania Street	1	0	0	0	0	0	0	1	2	0	0	0
3	367	Hotel Street	0	0	0	0	0	0	1	0	1	0	0	0
4	385	S. King Street	0	1	1	1	1	1	1	0	1	1	1	1
5	1262	Kapiolani Boulevard	1	1	1	1	1	0	1	1	1	0	1	1
Total	2373		2	2	2	2	2	1	3	2	5	1	2	2
<b>Average Speed</b>														
1	0	Kinau Street												
2	359	S. Beretania Street	3.3	23.6	15.8	21.4	19.5	27.3	23.5	3.6	4.1	22.8	19.9	19.8
3	367	Hotel Street	22.7	24.3	18.1	24.1	21.8	23.4	8.3	18.8	11	25.9	21	17.3
4	385	S. King Street	28.6	3.9	3.7	4	4	3.8	5.3	21.1	3.8	4.5	4	4.2
5	1262	Kapiolani Boulevard	9.8	21.7	18	9.1	13.4	25.4	15.5	10.7	10.9	26.4	8.1	13.8
Total	2373		8.9	12.6	10.9	8.8	10.5	13.4	11	9.2	7	14.1	8.3	10.7
<b>Total Delay</b>														
1	0	Kinau Street												
2	359	S. Beretania Street	69	5	10	6	7	3	5	63	54	5	7	7
3	367	Hotel Street	5	4	7	4	5	4	23	7	17	3	5	8
4	385	S. King Street	2	62	64	63	59	60	45	5	64	53	59	55
5	1262	Kapiolani Boulevard	66	17	26	72	42	12	32	58	56	10	80	41
Total	2373		142	88	107	145	113	79	105	133	191	71	151	111
<b>Time Less Than 0 MPH</b>														
1	0	Kinau Street												
2	359	S. Beretania Street	54	0	0	0	0	0	0	50	34	0	0	0
3	367	Hotel Street	0	0	0	0	0	0	0	0	0	0	0	0
4	385	S. King Street	0	45	48	45	45	44	26	0	44	34	43	35
5	1262	Kapiolani Boulevard	46	0	7	49	18	0	2	36	28	0	40	12
Total	2373		100	45	55	94	63	44	28	86	106	34	83	47

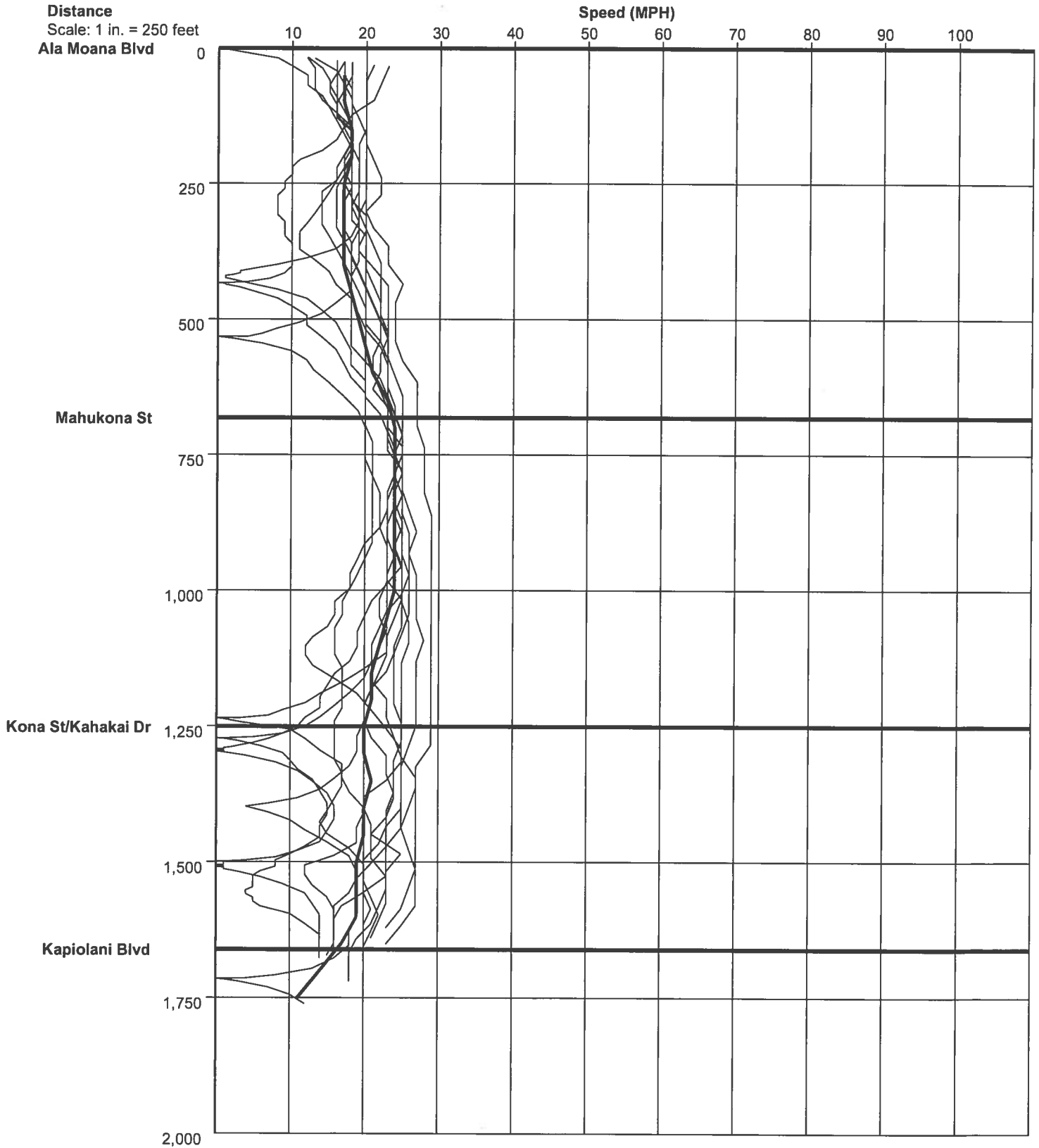


# Wilson Okamoto Corporation

1907 S. Beretania St. Suite 400  
Honolulu, HI 96826

Study Name : Atkinson NB AM  
Study Date : 10/6/2014

## Speed/Distance Profiles of All Runs







# Wilson Okamoto Corporation

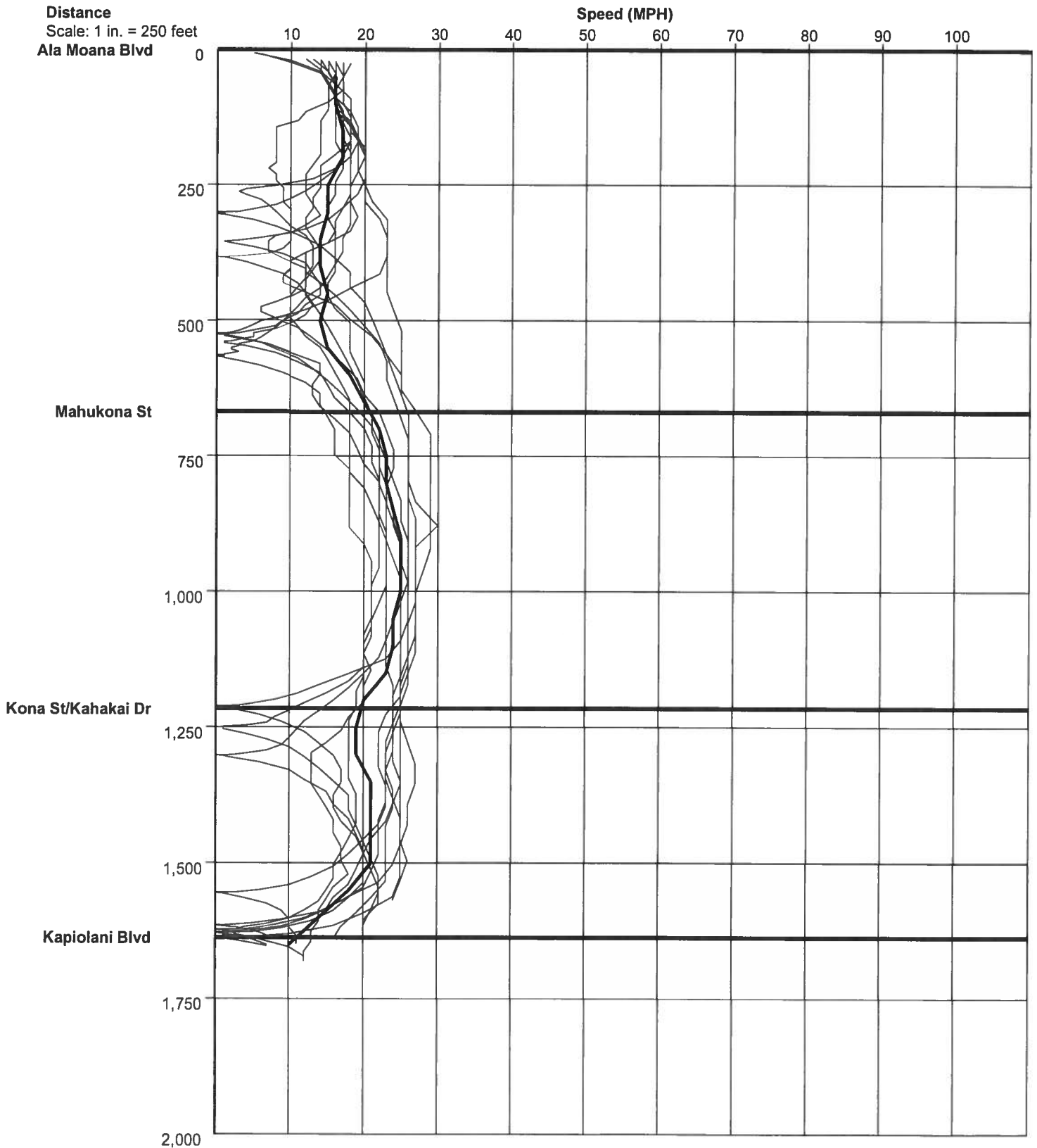
1907 S. Beretania St. Suite 400

Honolulu, HI 96826

Study Name : Atkinson NB PM

Study Date : 10/17/2013

## Speed/Distance Profiles of All Runs





Contraflow - Atkinson Drive Northbound PM

Node #	Length	Node Names	10/17/2013 3:00 PM	10/17/2013 3:15 PM	10/17/2013 3:30 PM	10/17/2013 3:45 PM	10/17/2013 4:00 PM	10/17/2013 4:15 PM	10/17/2013 4:30 PM	10/17/2013 4:45 PM	10/17/2013 5:00 PM	10/17/2013 5:15 PM	10/17/2013 5:30 PM	10/17/2013 5:45 PM
<b>Travel Time</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	33	43	33	26	59	27	61	23	29	60	58	67
3	547	Kona Street/Kahakai Drive	17	18	17	14	19	16	30	13	15	15	20	17
4	421	Kapiolani Boulevard	158	19	30	13	24	13	17	30	38	92	75	10
Total	1636		208	80	80	53	102	56	108	66	82	167	153	94
<b>Number of Stops</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	0	2	0	0	2	0	1	0	0	1	1	1
3	547	Kona Street/Kahakai Drive	0	0	0	0	0	0	1	0	0	0	0	0
4	421	Kapiolani Boulevard	2	0	1	0	1	1	0	1	1	1	1	0
Total	1636		2	2	1	0	3	1	2	1	1	2	2	1
<b>Average Speed</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	13.8	10.5	13.9	17.8	7.8	17	7.5	21.1	15.9	7.9	8	6.9
3	547	Kona Street/Kahakai Drive	22.3	21.2	22.4	26.6	19.3	24.3	12.4	27.2	26.2	24.8	19	22.7
4	421	Kapiolani Boulevard	1.8	14.8	9.6	21.8	11.7	20.5	16.5	9.4	7	3	3.7	24.8
Total	1636		5.4	14	14.1	21.1	10.9	19.9	10.3	17	13.7	6.7	7.3	11.5
<b>Total Delay</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	22	32	22	14	47	15	50	11	18	48	46	56
3	547	Kona Street/Kahakai Drive	8	8	7	5	10	6	21	3	5	5	10	7
4	421	Kapiolani Boulevard	151	12	23	6	17	6	10	23	31	85	68	3
Total	1636		181	52	52	25	74	27	81	37	54	138	124	66
<b>Time Less Than 0 MPH</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	0	0	0	0	14	0	25	0	0	25	12	23
3	547	Kona Street/Kahakai Drive	0	0	0	0	0	0	7	0	0	72	0	0
4	421	Kapiolani Boulevard	130	0	7	0	0	0	0	11	21	0	52	0
Total	1636		130	0	7	0	14	0	32	11	21	97	64	23
<b>Time Less Than 35 MPH</b>														
1	0	Ala Moana Boulevard												
2	668	Mahukona Street	33	43	33	26	59	27	61	23	29	60	58	67
3	547	Kona Street/Kahakai Drive	17	18	17	14	19	16	30	13	15	15	20	17
4	421	Kapiolani Boulevard	158	19	30	13	23	13	16	30	37	92	75	9
Total	1636		208	80	80	53	101	56	107	66	81	167	153	93

Contraflow - Atkinson Drive Northbound PM

Time Less Than 55 MPH		Ala Moana Boulevard																
1	0																	
2	668	Mahukona Street	33	43	33	26	59	27	61	23	29	60	58	67				
3	547	Kona Street/Kahakai Drive	17	18	17	14	19	16	30	13	15	15	20	17				
4	421	Kapiolani Boulevard	158	19	30	13	23	13	16	30	37	92	75	9				
Total	1636		208	80	80	53	101	56	107	66	81	167	153	93				
Travel Time (min)		Ala Moana Boulevard																
1	0																	
2	668	Mahukona Street	0.55	0.72	0.55	0.43	0.98	0.45	1.02	0.38	0.48	1.00	0.97	1.12				
3	547	Kona Street/Kahakai Drive	0.28	0.30	0.28	0.23	0.32	0.27	0.50	0.22	0.25	0.25	0.33	0.28				
4	421	Kapiolani Boulevard	2.63	0.32	0.50	0.22	0.40	0.22	0.28	0.50	0.63	1.53	1.25	0.17				
Total	1636		3.47	1.33	1.33	0.88	1.70	0.93	1.80	1.10	1.37	2.78	2.55	1.57				

# Wilson Okamoto Corporation

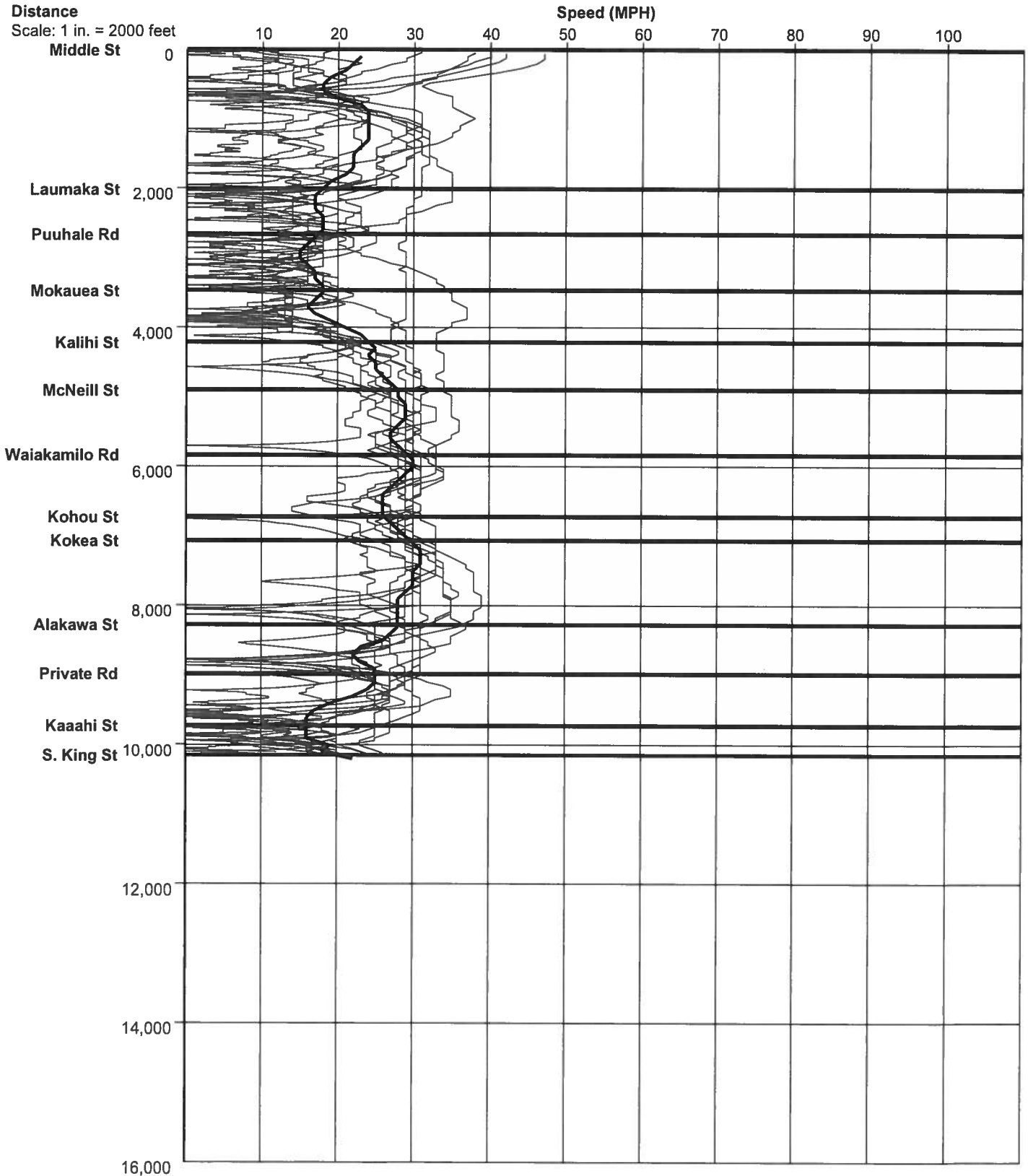
1907 S. Beretania St. Suite 400

Honolulu, HI 96826

Study Name : **Dillingham EB AM**

Study Date : **1/22/2014**

## Speed/Distance Profiles of All Runs



Contraflow - Dillingham Boulevard Eastbound AM

Node #	Length	Node Names	10/16/2013 6:00 AM	10/16/2013 6:15 AM	10/16/2013 6:30 AM	10/16/2013 6:45 AM	10/16/2013 7:00 AM	10/16/2013 7:15 AM	10/16/2013 7:30 AM	10/16/2013 7:45 AM	10/16/2013 8:00 AM	10/16/2013 8:15 AM	10/16/2013 8:30 AM	10/16/2013 8:45 AM
<b>Travel Time</b>														
1	0	Middle Street												
2	2003	Laumaka Street	64	78	72	104	126	114	223	106	120	128	154	43
3	652	Puuhale Road	15	15	21	31	95	43	37	36	27	38	84	46
4	808	Mokauea Street	19	22	81	54	39	41	107	40	55	97	64	67
5	745	Kalihi Street	18	14	39	78	51	86	22	88	85	43	74	34
6	685	McNeill Street	16	14	18	20	20	22	16	27	47	25	19	17
7	936	Waiakamilo Road	22	18	22	22	24	22	22	24	24	68	24	21
8	888	Kohou Street	20	21	22	21	20	19	22	20	21	28	27	23
9	340	Kokea Street	8	8	8	9	9	8	9	8	61	10	9	8
10	1212	Alakawa Street	29	24	77	28	84	32	92	22	38	27	29	24
11	704	Private Road	54	16	28	15	18	62	27	44	16	19	50	32
12	746	Kaaahi Street	20	18	19	22	90	26	126	59	32	24	206	26
13	422	South King Street	11	26	145	46	16	19	21	50	109	116	151	73
Total	10141		296	274	551	450	592	490	724	524	635	623	891	414
<b>Number of Stops</b>														
1	0	Middle Street												
2	2003	Laumaka Street	1	1	2	1	2	1	4	1	1	1	5	0
3	652	Puuhale Road	0	0	0	0	2	1	2	1	0	1	2	2
4	808	Mokauea Street	0	0	2	2	1	1	3	1	1	4	1	1
5	745	Kalihi Street	0	0	0	1	1	1	0	2	2	1	1	1
6	685	McNeill Street	0	0	0	0	0	0	0	0	1	0	0	0
7	936	Waiakamilo Road	0	0	0	0	0	0	0	0	0	1	0	0
8	888	Kohou Street	0	0	0	0	0	0	0	0	0	0	0	0
9	340	Kokea Street	0	0	0	0	0	0	0	0	0	0	0	0
10	1212	Alakawa Street	0	0	1	0	1	0	1	0	0	0	0	0
11	704	Private Road	1	0	0	0	0	1	1	1	0	0	1	1
12	746	Kaaahi Street	0	0	0	0	1	1	1	2	1	0	4	0
13	422	South King Street	0	1	1	1	0	0	0	1	0	2	1	1
Total	10141		2	2	6	5	8	6	12	9	7	10	15	6
<b>Average Speed</b>														
1	0	Middle Street												
2	2003	Laumaka Street	21.5	17.8	19.1	13.2	10.9	12.1	6.2	13	11.6	10.7	8.9	31.9
3	652	Puuhale Road	29.5	28.1	21.1	14.4	4.8	10.3	11.6	12.4	16	11.9	5.2	9.9
4	808	Mokauea Street	28.8	26.4	6.7	10.2	13.9	13.2	5.2	13.9	9.9	5.6	8.6	8
5	745	Kalihi Street	28.8	35	13.4	6.6	10	6	23.4	5.7	6	12.3	6.8	15.1
6	685	McNeill Street	30.2	33.7	27.1	23.4	23.3	25.8	29.6	17.4	10.2	18.6	24.8	28.1
7	936	Waiakamilo Road	28.4	34.7	30	28.7	27.3	28.9	28.6	26.4	26.4	9.3	27.3	30
8	888	Kohou Street	30.1	29.3	27.7	29.4	29.3	31.8	27	30.3	28.6	21.9	21.7	26.5
9	340	Kokea Street	29.3	28.9	27	24.8	28.7	29.9	28.2	32.6	3.7	21.9	25.6	28.6
10	1212	Alakawa Street	28.4	33.8	10.8	31.2	9.7	25.8	9	37	21.9	31.5	29	34
11	704	Private Road	9.1	29.9	17.4	23.6	27	7.9	17.4	10.5	30.7	23.8	9.6	15.2
12	746	Kaaahi Street	25.6	29.1	26.2	23.6	5.4	19.2	4	8.6	15.3	21.5	2.4	19.3
13	422	South King Street	25.2	9.9	2	5.4	18.4	15	14.3	6	2.6	2.4	1.7	3.9
Total	10141		23.4	25.2	12.6	15.3	11.7	14.1	9.6	13.2	10.9	11.1	7.7	16.7



Contraflow - Dillingham Boulevard Eastbound AM

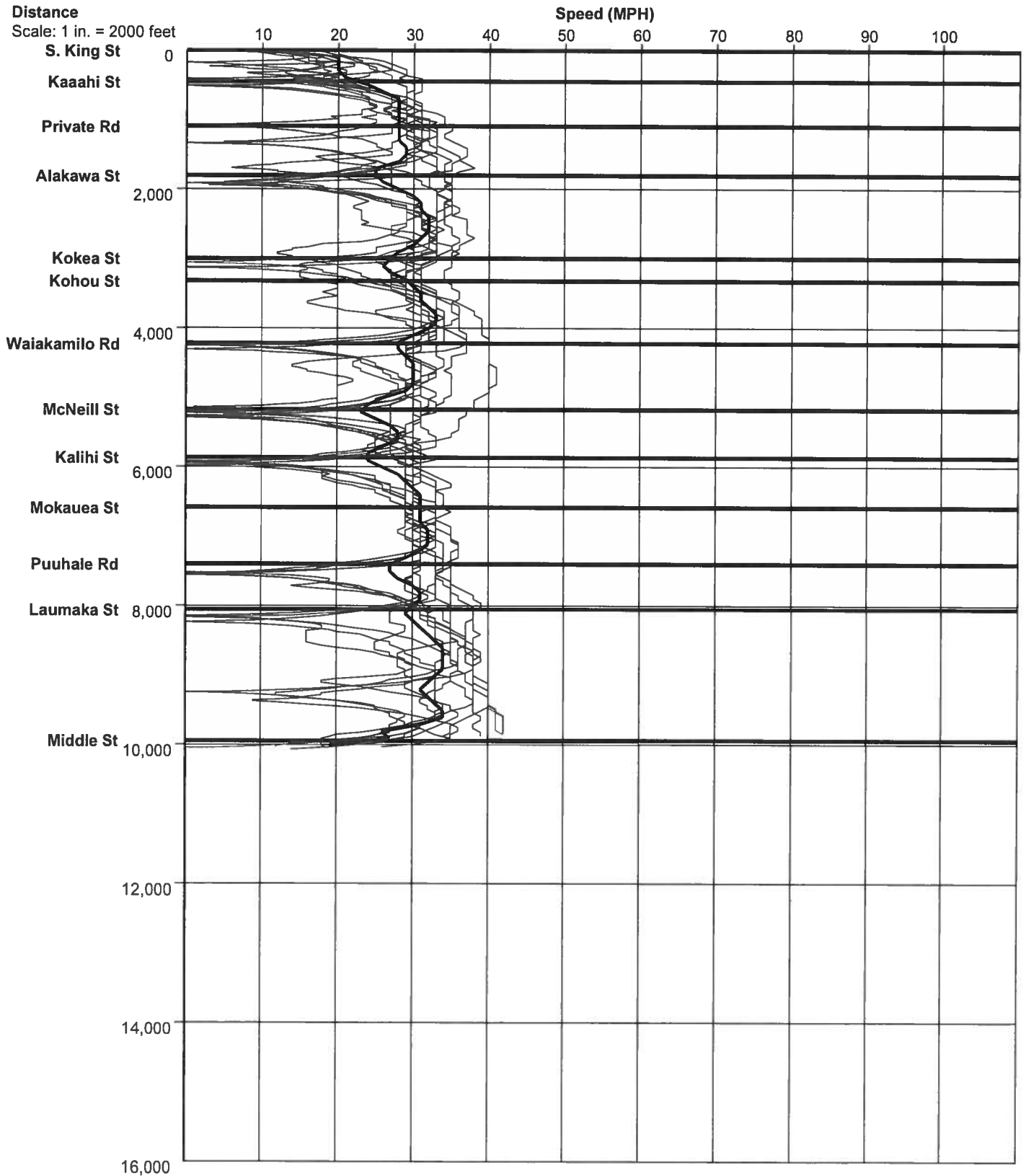
Time Less Than 55 MPH		64	78	72	104	126	114	223	106	120	128	154	43
1	0	Middle Street											
2	2003	Laumaka Street	15	21	31	95	43	37	36	27	38	84	46
3	652	Puuhaale Road	19	22	54	39	41	107	40	55	97	64	67
4	808	Mokauea Street	18	14	78	51	86	22	88	85	43	74	34
5	745	Kalihi Street	16	14	20	20	18	16	27	47	25	19	17
6	685	McNeill Street	22	18	22	24	22	22	24	24	68	24	21
7	936	Waiakamilo Road	20	21	22	20	19	22	20	21	28	27	23
8	888	Kohou Street	8	8	9	9	8	9	8	61	10	9	8
9	340	Kokea Street	29	24	77	84	32	92	22	38	27	29	24
10	1212	Alakawa Street	54	16	28	18	62	27	44	16	19	50	32
11	704	Private Road	20	18	19	22	26	126	59	24	24	206	26
12	746	Kaaahi Street	11	25	145	15	19	21	50	108	115	150	73
13	422	South King Street											
Total	10141		296	273	551	449	490	724	524	634	622	890	414
Travel Time (min)		1.07	1.30	1.20	1.73	2.10	1.90	3.72	1.77	2.00	2.13	2.57	0.72
1	0	Middle Street											
2	2003	Laumaka Street	0.25	0.25	0.35	0.52	0.72	0.62	0.60	0.45	0.63	1.40	0.77
3	652	Puuhaale Road	0.32	0.37	1.35	0.90	0.68	1.78	0.67	0.92	1.62	1.07	1.12
4	808	Mokauea Street	0.30	0.23	0.65	1.30	1.43	0.37	1.47	1.42	0.72	1.23	0.57
5	745	Kalihi Street	0.27	0.23	0.30	0.33	0.30	0.27	0.45	0.78	0.42	0.32	0.28
6	685	McNeill Street	0.37	0.30	0.35	0.37	0.37	0.37	0.40	0.40	1.13	0.40	0.35
7	936	Waiakamilo Road	0.33	0.35	0.37	0.35	0.32	0.37	0.33	0.35	0.47	0.45	0.38
8	888	Kohou Street	0.13	0.13	0.13	0.15	0.13	0.15	0.13	1.02	0.17	0.15	0.13
9	340	Kokea Street	0.48	0.40	1.28	0.47	0.53	1.53	0.37	0.63	0.45	0.48	0.40
10	1212	Alakawa Street	0.90	0.27	0.47	0.25	1.03	0.45	0.73	0.27	0.32	0.83	0.53
11	704	Private Road	0.33	0.30	0.32	0.37	0.43	2.10	0.98	0.53	0.40	3.43	0.43
12	746	Kaaahi Street	0.18	0.43	2.42	0.77	0.32	0.35	0.83	1.82	1.93	2.52	1.22
13	422	South King Street											
Total	10141		4.93	4.57	9.18	7.50	8.17	12.07	8.73	10.58	10.38	14.85	6.90

# Wilson Okamoto Corporation

1907 S. Beretania St. Suite 400  
Honolulu, HI 96826

Study Name : Dillingham WB AM  
Study Date : 10/17/2013

## Speed/Distance Profiles of All Runs





Node #	Length	Node Names	10/17/2013 6:00 AM	10/17/2013 6:15 AM	10/17/2013 6:30 AM	10/17/2013 6:45 AM	10/17/2013 7:00 AM	10/17/2013 7:15 AM	10/17/2013 7:30 AM	10/17/2013 7:45 AM	10/17/2013 8:00 AM	10/17/2013 8:15 AM	10/17/2013 8:30 AM	10/17/2013 8:45 AM
<b>Travel Time</b>														
1	0	South King Street			14	38	14	37	34	19	15	20	31	23
2	446	Kaaahi Street	15	11	29	15	16	28	28	17	17	17	18	35
3	642	Private Road	14	15	28	14	49	30	21	16	16	17	16	14
4	712	Alakawa Street	16	16	33	26	43	29	36	36	26	73	23	24
5	1193	Kokea Street	23	33	7	8	11	8	8	14	49	8	6	51
6	327	Kohou Street	7	8	19	18	22	20	21	25	20	19	20	18
7	896	Waiakamilo Road	20	20	22	19	22	20	21	25	20	19	20	18
8	954	McNeill Street	39	24	22	19	22	58	21	25	25	63	63	16
9	688	Kalihi Street	15	45	31	18	28	49	15	29	17	33	19	15
10	718	Mokauea Street	15	15	17	39	17	56	15	15	42	16	77	54
11	814	Puuhale Road	18	18	19	18	17	19	16	19	17	16	19	18
12	653	Laumaka Street	39	14	52	12	15	60	13	47	13	14	14	15
13	1893	Middle Street	32	72	33	45	51	35	68	35	41	67	42	50
Total	9936		253	291	297	279	282	348	376	319	294	325	348	333
<b>Number of Stops</b>														
1	0	South King Street	0	0	0	0	0	1	1	0	0	0	0	1
2	446	Kaaahi Street	0	0	1	0	0	0	1	0	0	0	0	1
3	642	Private Road	0	0	1	0	0	0	0	0	0	0	0	0
4	712	Alakawa Street	0	0	1	0	1	0	0	0	0	0	0	0
5	1193	Kokea Street	0	0	0	1	0	0	0	0	0	1	0	0
6	327	Kohou Street	0	0	0	0	0	0	0	0	1	0	0	1
7	896	Waiakamilo Road	0	0	0	0	0	0	0	0	0	0	0	0
8	954	McNeill Street	1	0	0	0	0	0	1	1	0	0	1	0
9	688	Kalihi Street	0	1	1	1	1	1	0	1	0	0	0	0
10	718	Mokauea Street	0	0	0	1	0	0	1	0	1	0	1	1
11	814	Puuhale Road	0	0	0	0	0	0	0	0	0	0	0	0
12	653	Laumaka Street	1	0	1	0	0	1	0	1	0	0	0	0
13	1893	Middle Street	0	1	0	0	1	0	1	0	0	1	0	0
Total	9936		2	2	4	2	3	3	5	3	2	3	2	4
<b>Average Speed</b>														
1	0	South King Street												
2	446	Kaaahi Street	21.9	28.4	22.1	8.1	23.6	8.4	9.1	16.7	20.5	15.9	10	13.7
3	642	Private Road	29.4	30.7	15.4	29.6	28.7	27.3	15.6	26.5	26.1	25.9	24.3	13.1
4	712	Alakawa Street	32.1	28.6	17.1	34.7	10.1	27.3	16	22.2	31.1	28.3	31.3	34.7
5	1193	Kokea Street	34.7	24.6	31	23.1	32.8	19	28.3	22.7	30.5	11.1	35.2	33.1
6	327	Kohou Street	31	29.9	31.4	27	28.6	21.6	30.8	15.9	4.9	28.1	34.3	4.2
7	896	Waiakamilo Road	30.9	30.4	33.3	34.8	28.6	30.5	28	24	30.6	31.7	30.9	35.7
8	954	McNeill Street	17.1	27.1	28.9	34.7	29.2	27.9	11.5	15.5	31.2	26.1	10.2	39.7
9	688	Kalihi Street	30.1	10.6	15.6	25.2	16.5	9.3	30.5	16.1	26.3	14.7	25.1	30.9
10	718	Mokauea Street	32.3	31.7	28.9	12.6	29.8	30.5	8.9	32.3	11.6	30.6	6.3	9.1
11	814	Puuhale Road	30.7	32	29.4	31.4	31	28.5	33.9	30.1	32.4	34.7	30.5	31.1
12	653	Laumaka Street	12	30.4	8.5	36.7	29.9	7.7	35.2	9.3	34.3	30.9	32.3	29.5
13	1893	Middle Street	38.4	18	37.8	28.4	25.5	35.8	18.9	36.6	31.7	19.3	30.1	25.6
Total	9936		26.6	23.3	22.7	24.3	24.1	19.4	18.1	21.2	23.1	20.9	19.5	20.4



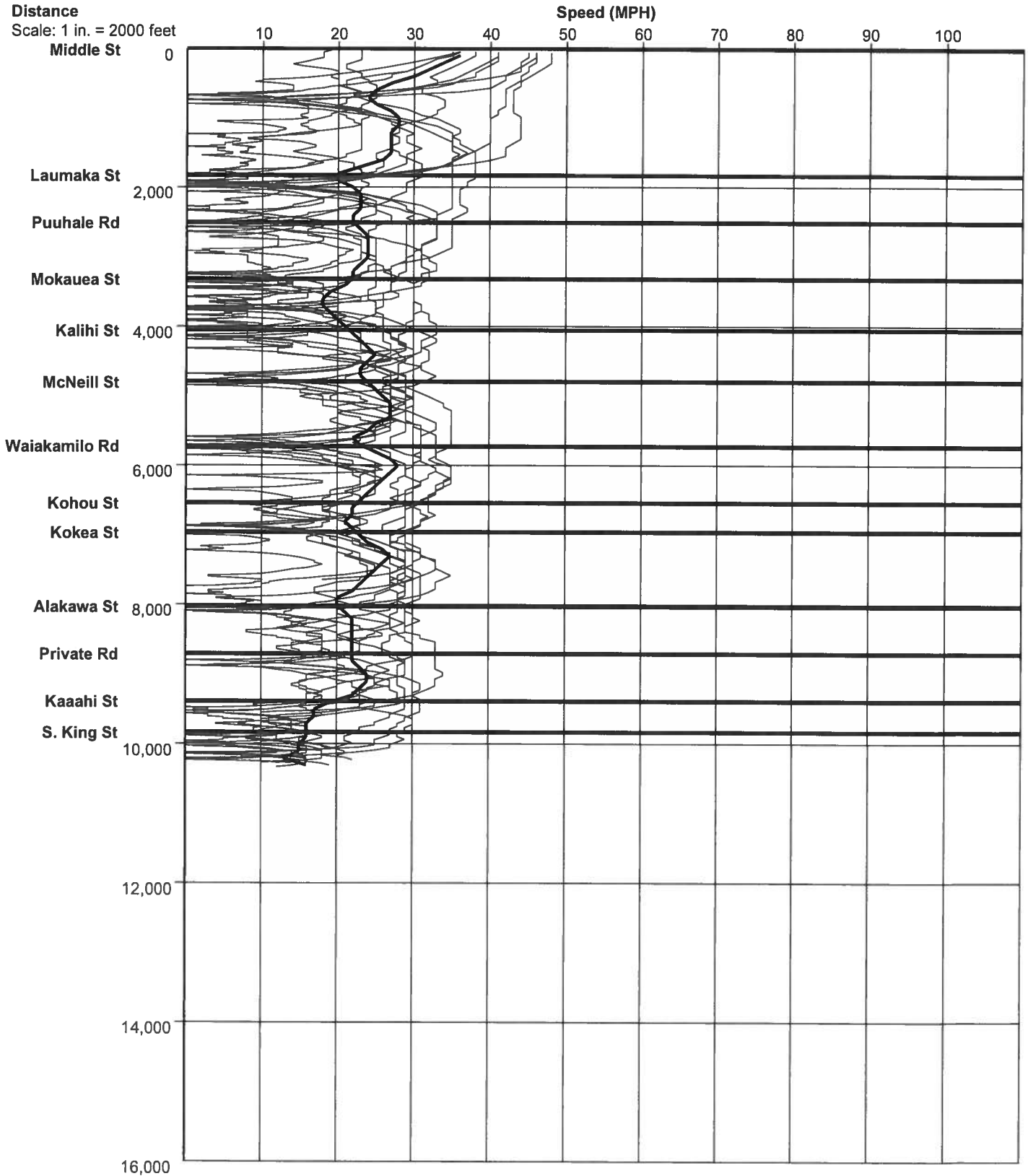
Time Less Than 55 MPH		15	11	14	38	14	37	34	19	15	20	31	23
1	0												
2	446	South King Street	11	14	38	14	37	34	19	15	20	31	23
3	642	Kaaahi Street	15	29	15	16	16	28	17	17	17	18	35
4	712	Private Road	16	28	14	18	18	30	21	16	17	16	14
5	1193	Alakawa Street	23	26	35	24	43	29	36	26	73	23	24
6	327	Kokea Street	7	7	8	8	11	8	14	49	8	6	51
7	896	Kohou Street	20	19	18	18	20	21	20	20	19	20	18
8	954	Waiaakamilo Road	39	22	19	19	23	58	42	21	25	63	16
9	688	McNeill Street	15	31	18	18	49	15	29	17	33	19	15
10	718	Kalihi Street	15	17	39	17	17	56	15	42	16	77	54
11	814	Puuhale Road	18	19	18	17	19	16	19	17	16	19	18
12	653	Laumaka Street	39	14	12	12	60	13	47	13	14	14	15
13	1893	Middle Street	31	32	44	44	34	68	34	41	67	42	50
Total	9936		252	296	278	282	347	376	318	294	325	348	333
Travel Time (min)		0.25	0.18	0.23	0.63	0.23	0.62	0.57	0.32	0.25	0.33	0.52	0.38
1	0												
2	446	South King Street	0.25	0.18	0.23	0.63	0.62	0.57	0.32	0.25	0.33	0.52	0.38
3	642	Kaaahi Street	0.23	0.25	0.48	0.25	0.27	0.47	0.28	0.28	0.28	0.30	0.58
4	712	Private Road	0.27	0.47	0.47	0.23	0.30	0.50	0.35	0.27	0.28	0.27	0.23
5	1193	Alakawa Street	0.38	0.55	0.43	0.58	0.72	0.48	0.60	0.43	1.22	0.38	0.40
6	327	Kokea Street	0.12	0.13	0.12	0.13	0.18	0.13	0.23	0.82	0.13	0.10	0.85
7	896	Kohou Street	0.33	0.33	0.32	0.30	0.33	0.35	0.42	0.33	0.32	0.33	0.30
8	954	Waiaakamilo Road	0.65	0.40	0.37	0.32	0.38	0.97	0.70	0.35	0.42	1.05	0.27
9	688	Kalihi Street	0.25	0.75	0.52	0.30	0.82	0.25	0.48	0.28	0.55	0.32	0.25
10	718	McNeill Street	0.25	0.25	0.28	0.65	0.28	0.93	0.25	0.70	0.27	1.28	0.90
11	814	Mokauea Street	0.30	0.30	0.32	0.30	0.32	0.27	0.32	0.28	0.27	0.32	0.30
12	653	Puuhale Road	0.65	0.23	0.87	0.20	1.00	0.22	0.78	0.22	0.23	0.23	0.25
13	1893	Laumaka Street	0.53	1.20	0.55	0.75	0.58	1.13	0.58	0.68	1.12	0.70	0.83
Total	9936		4.22	4.85	4.95	4.65	5.80	6.27	5.32	4.90	5.42	5.80	5.55

# Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400  
Honolulu, HI 96826

Study Name : Dillingham EB PM  
Study Date : 10/16/2013

## Speed/Distance Profiles of All Runs



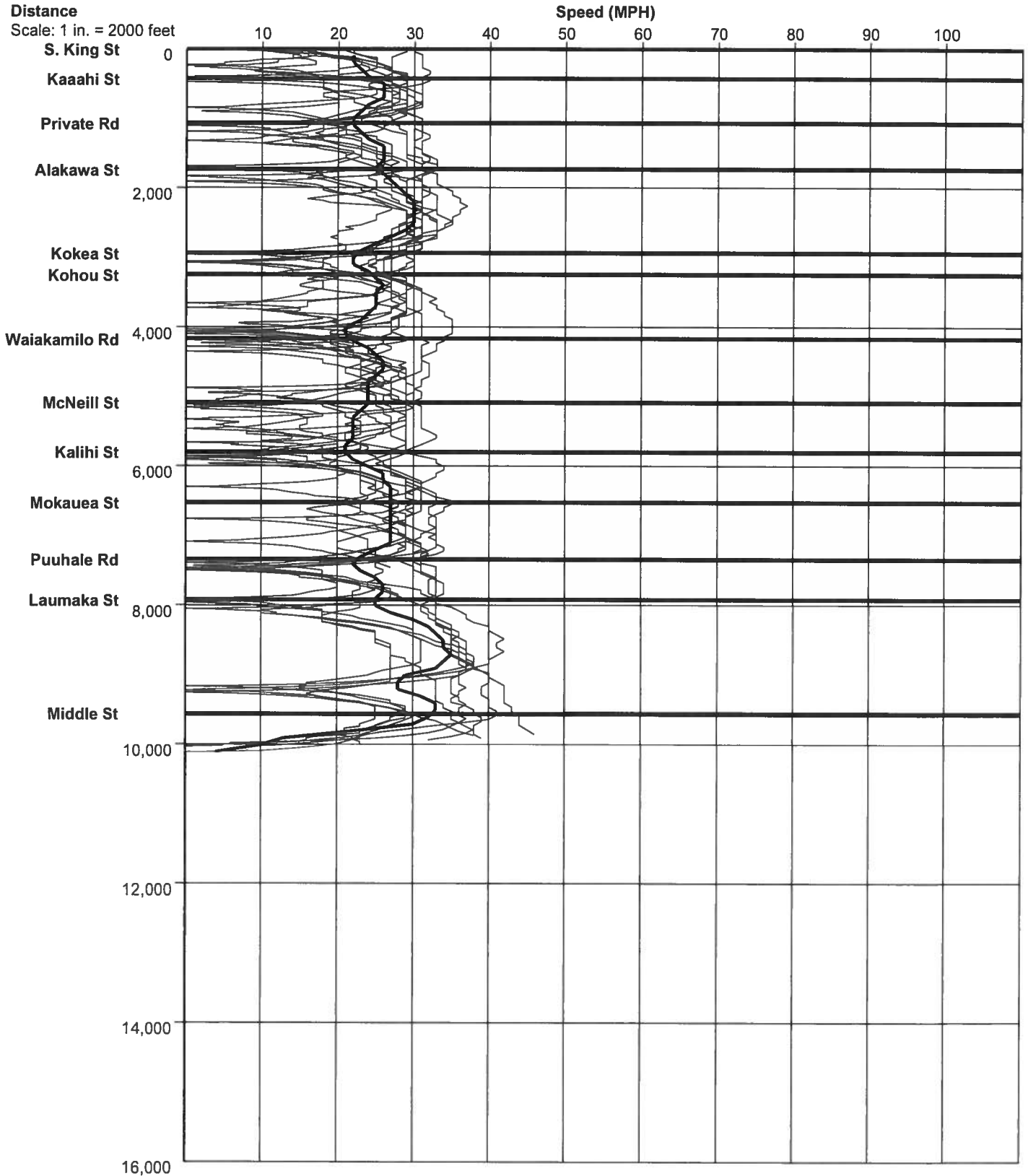








**Speed/Distance Profiles of All Runs**









# Wilson Okamoto Corporation

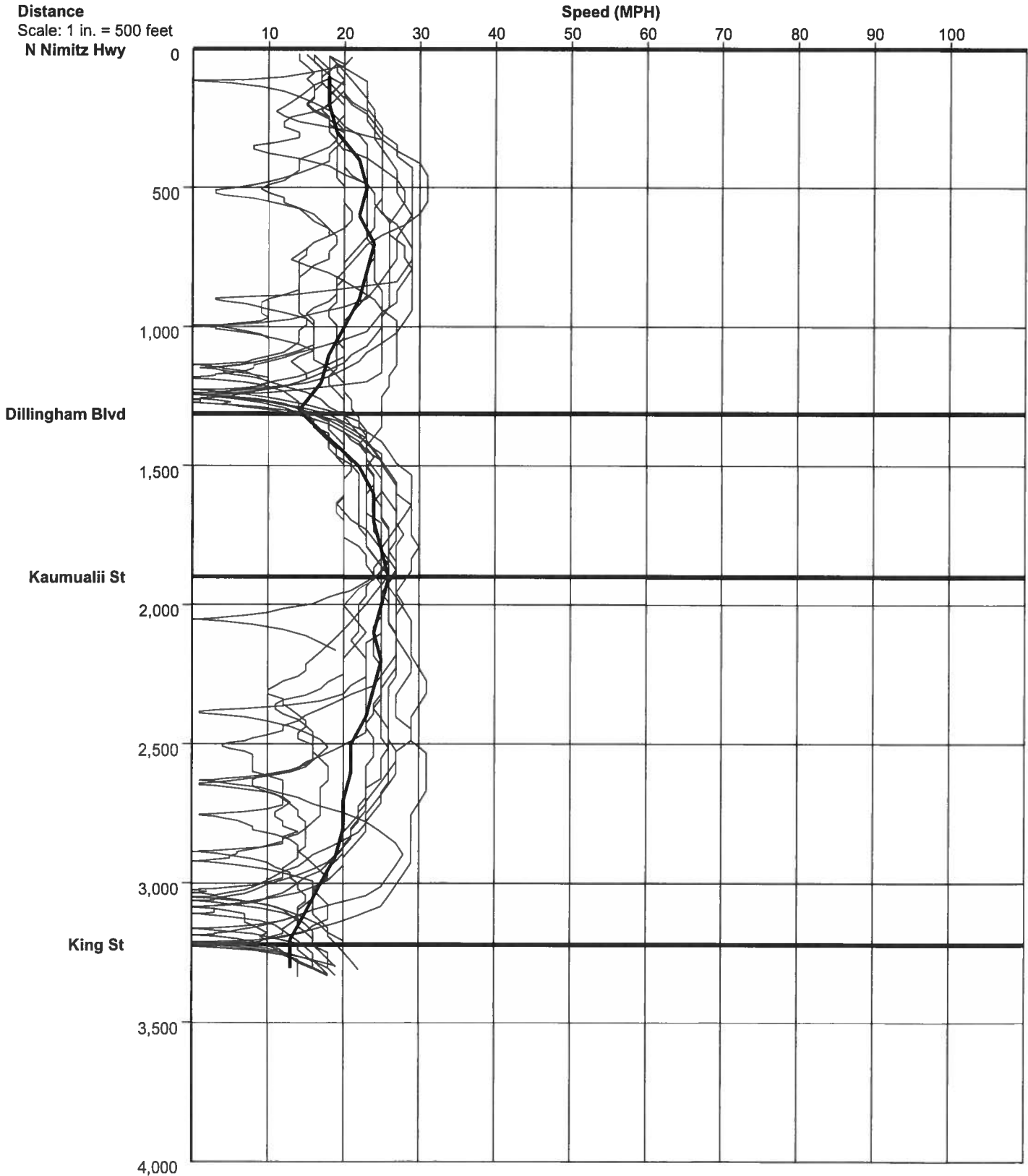
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Kalihi NB AM

Study Date : 12/10/2014

## Speed/Distance Profiles of All Runs



Contraflow - Kalihi Street Northbound AM

Node #	Length	Node Names	10/17/2013 6:00 AM	10/17/2013 6:15 AM	10/17/2013 6:30 AM	10/17/2013 6:45 AM	10/17/2013 7:00 AM	10/17/2013 7:15 AM	10/17/2013 7:30 AM	10/17/2013 7:45 AM	10/17/2013 8:00 AM	10/17/2013 8:15 AM	10/17/2013 8:30 AM	10/17/2013 8:45 AM
<b>Travel Time</b>														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	116	67	124	90	124	110	50	110	94	44	85	143
3	587	Kaunualii Street	17	17	20	15	16	20	17	19	16	18	16	15
4	1319	King Street	128	110	70	190	63	97	165	195	182	164	109	37
Total	3217		261	194	214	295	203	227	232	324	292	226	210	195
<b>Number of Stops</b>														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	1	2	1	3	1	1	0	1	2	0	3	1
3	587	Kaunualii Street	0	0	0	0	0	0	0	0	0	0	0	0
4	1319	King Street	1	1	1	3	1	1	1	2	3	1	1	1
Total	3217		2	3	2	6	2	2	1	3	5	1	4	2
<b>Average Speed</b>														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	7.8	13.3	7.2	10.1	7.2	8.3	18.1	8.1	9.6	20.6	10.8	6.2
3	587	Kaunualii Street	23.9	24.4	21.3	25.7	25.3	20.2	24.2	21.3	24.8	22.7	24.6	27.3
4	1319	King Street	639	8	12.5	4.8	2.7	9.2	5.3	4.6	5	5.4	8.3	24
Total	3217		8.4	11.3	10.3	7.5	7.3	9.7	9.5	6.8	7.6	9.7	10.5	11.2
<b>Total Delay</b>														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	93	93	102	67	101	87	27	88	71	21	62	121
3	587	Kaunualii Street	7	7	9	5	6	10	6	9	6	7	6	5
4	1319	King Street	105	88	47	167	58	74	143	172	159	142	86	15
Total	3217		205	188	158	239	165	171	176	269	236	170	154	141





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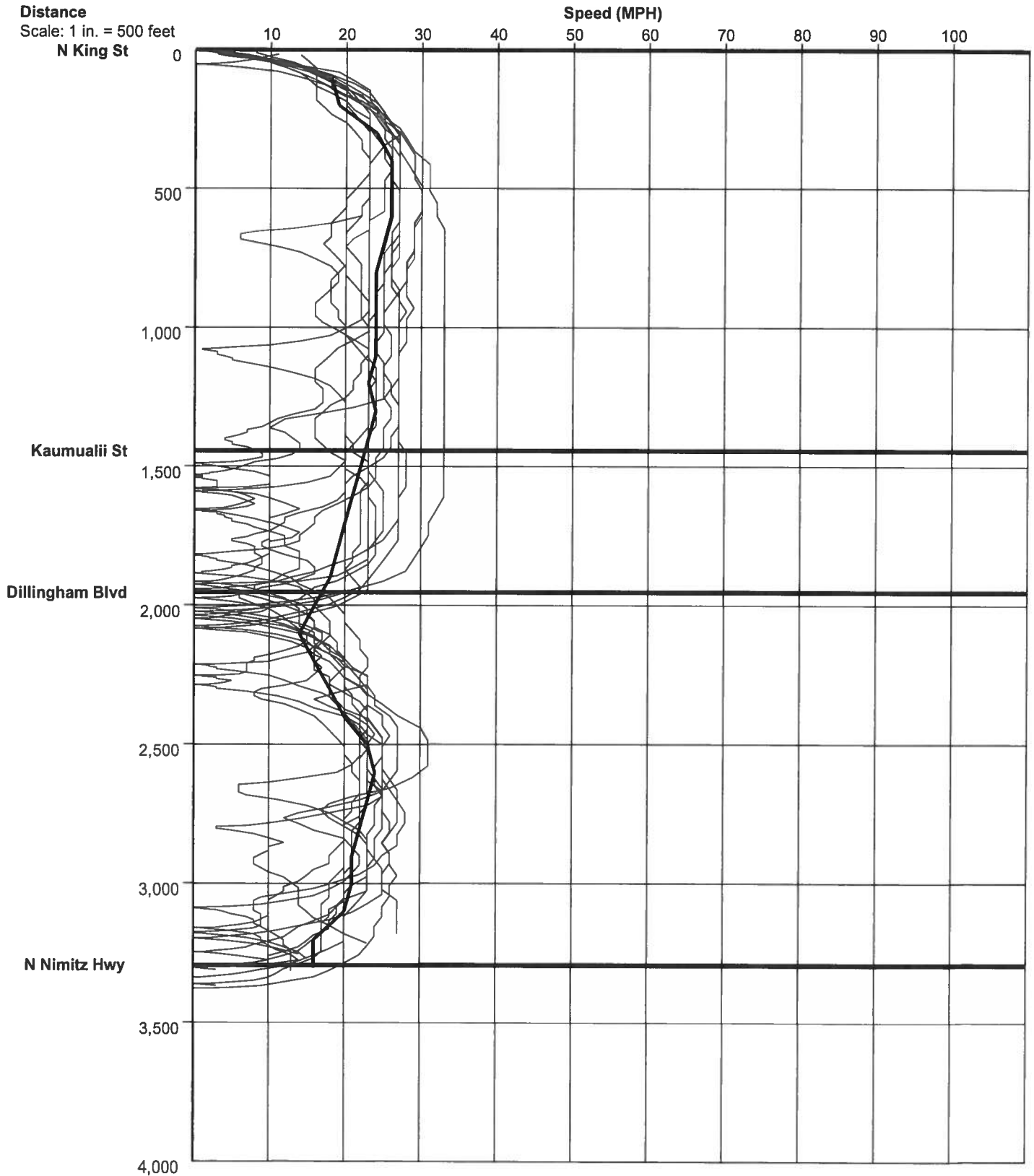
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Kalihi SB AM

Study Date : 12/10/2014

## Speed/Distance Profiles of All Runs







# Wilson Okamoto Corporation

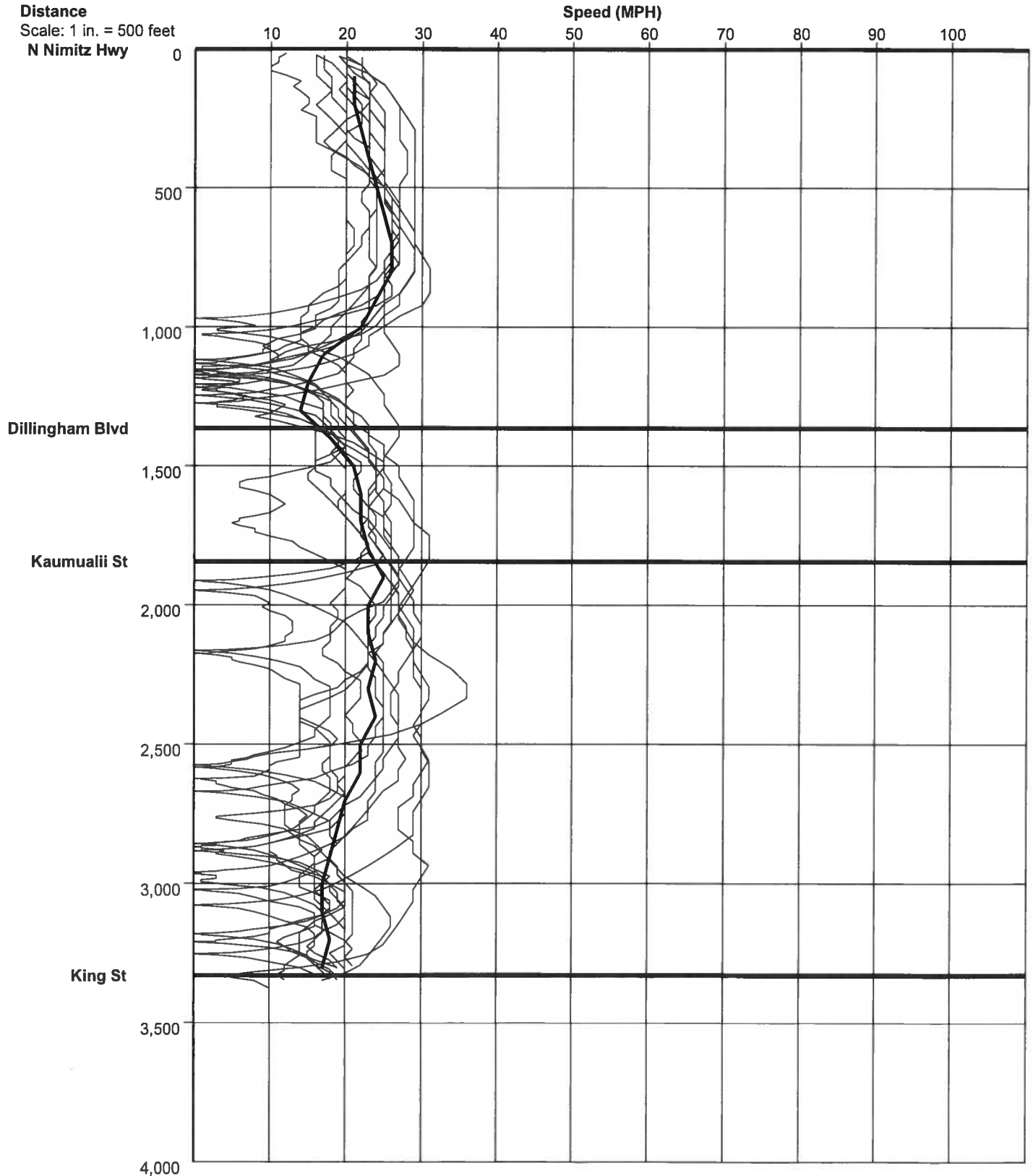
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Kalihi NB PM

Study Date : 12/10/2014

## Speed/Distance Profiles of All Runs



Contraflow - Kailhi Street Northbound PM

Node #	Length	Node Names	1/21/2014 3:00 PM	1/21/2014 3:15 PM	1/21/2014 3:30 PM	1/21/2014 3:45 PM	1/21/2014 4:00 PM	1/21/2014 4:15 PM	1/21/2014 4:30 PM	1/21/2014 4:45 PM	1/21/2014 5:00 PM	1/21/2014 5:15 PM	1/21/2014 5:30 PM	1/21/2014 5:45 PM
<b>Travel Time</b>														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	64	44	123	52	84	85	126	57	80	127	66	101
3	479	Kaumualii Street	15	13	13	13	13	17	14	14	29	16	17	12
4	1485	King St	67	109	82	405	226	128	15	296	132	104	38	54
Total	3327		146	166	218	470	323	230	155	367	241	247	121	167
<b>Number of Stops</b>														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	2	0	2	2	1	1	1	1	1	1	2	2
3	479	Kaumualii Street	0	0	0	0	0	0	0	0	0	0	0	0
4	1485	King St	1	1	1	4	2	2	1	3	1	1	1	1
Total	3327		3	1	3	6	3	3	2	4	2	2	3	3
<b>Average Speed</b>														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	14.5	21.4	7.7	18.3	11.2	11	7.5	16.6	11.7	7.8	14.3	9.4
3	479	Kaumualii Street	22.8	24.8	25.2	24.2	26.8	18.8	23.4	22.6	10.9	20.3	20.1	27.7
4	1485	King St	14.8	9.2	12	2.5	4.3	7.9	6.6	3.4	7.8	9.8	26.1	18.6
Total	3327		15.5	13.7	10.3	4.8	7	9.9	7.8	6.2	9.4	9.2	18.8	13.7
<b>Total Delay</b>														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	41	20	99	28	61	62	102	33	57	104	43	77
3	479	Kaumualii Street	6	5	4	5	4	9	5	6	21	8	8	3
4	1485	King St	42	84	57	379	201	103	127	271	106	78	13	28
Total	3327		89	109	160	412	266	174	234	310	184	190	64	108



# Wilson Okamoto Corporation

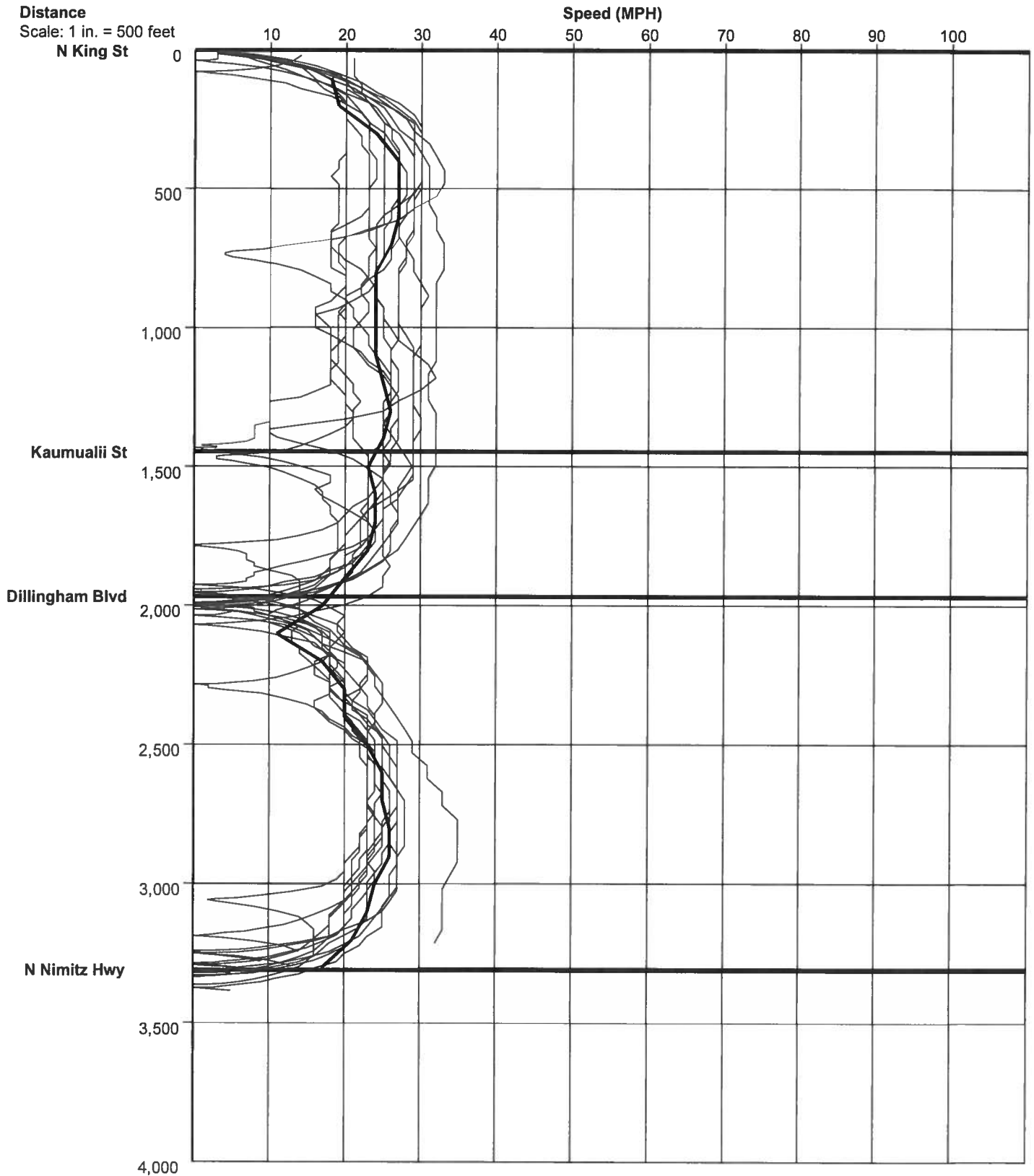
1907 S. Beretania St, Suite 400

Honolulu, HI 96826

Study Name : Kalihi SB PM

Study Date : 12/10/2014

## Speed/Distance Profiles of All Runs





Contratflow - Kailihi Street Southbound PM

Node #	Length	Node Names	10/17/2013 3:00 PM	10/17/2013 3:15 PM	10/17/2013 3:30 PM	10/17/2013 3:45 PM	10/17/2013 4:00 PM	10/17/2013 4:15 PM	10/17/2013 4:30 PM	10/17/2013 4:45 PM	10/17/2013 5:00 PM	10/17/2013 5:15 PM	10/17/2013 5:30 PM	10/17/2013 5:45 PM
<b>Travel Time</b>														
1	0	N. King Street												
2	1446	Kaumualii Street	85	47	49	78	55	45	41	47	100	159	49	38
3	520	Dillingham Boulevard	14	15	16	21	18	50	56	52	14	14	27	58
4	1341	N. Nimitz Highway	120	63	43	113	235	117	196	141	185	120	122	31
Total	3307		219	125	108	212	308	212	293	240	299	293	198	127
<b>Number of Stops</b>														
1	0	N. King Street												
2	1446	Kaumualii Street	1	0	1	1	0	0	0	0	0	0	0	0
3	520	Dillingham Boulevard	0	0	0	0	0	1	1	1	0	0	1	1
4	1341	N. Nimitz Highway	2	1	0	1	3	1	1	1	2	2	1	0
Total	3307		3	1	1	2	3	2	2	2	2	2	2	1
<b>Average Speed</b>														
1	0	N. King Street												
2	1446	Kaumualii Street	11.7	21.4	20.6	12.6	18.1	22.2	24.3	21.4	9.9	6.4	20.3	26.2
3	520	Dillingham Boulevard	25	22.5	21.4	17.2	19.3	7	6.2	6.6	25.3	23.4	13.1	6.2
4	1341	N. Nimitz Highway	7.6	14.5	21.3	8.1	3.9	7.7	4.7	6.3	4.7	7.6	7.4	28
Total	3307		10.3	18	21	10.6	7.3	10.6	7.7	9.3	7.4	7.7	11.4	17.4
<b>Total Delay</b>														
1	0	N. King Street												
2	1446	Kaumualii Street	60	22	24	53	30	20	16	22	75	134	24	13
3	520	Dillingham Boulevard	5	6	7	12	9	41	47	43	5	5	18	49
4	1341	N. Nimitz Highway	97	40	20	90	212	94	173	118	163	97	99	9
Total	3307		162	68	51	155	251	155	236	183	243	236	141	71



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**APPENDIX B**

**LEVEL OF SERVICE DEFINITIONS**

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## LEVEL OF SERVICE DEFINITIONS

### LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

**Level of Service (LOS)** criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

**Table 1: Level-of-Service Criteria for  
Unsignalized Intersections**

<b>Level of Service</b>	<b>Average Control Delay (Sec/Veh)</b>
A	$\leq 10.0$
B	$>10.0$ and $\leq 15.0$
C	$>15.0$ and $\leq 25.0$
D	$>25.0$ and $\leq 35.0$
E	$>35.0$ and $\leq 50.0$
F	$>50.0$

## LEVEL OF SERVICE DEFINITIONS

### LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

**Level of Service (LOS)** can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control and volume-to-capacity ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

**Table 1: Level-of-Service Criteria for Signalized Intersections**

Level of Service	LOS by Volume-to-Capacity Ratio
A	≤10
B	>10 – 20
C	>20 – 35
D	>35 - 55.0
E	>55.0 - 80.0
F	>80.0

**Level of Service A** describes operation with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

**Level of Service B** describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

**Level of Service C** describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

**Level of Service D** describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

**Level of Service E** describes operation with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

**Level of Service F** describes operation with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. The level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

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**APPENDIX C**  
**CAPACITY ANALYSIS CALCULATIONS**  
**KAPIOLANI BOULEVARD**













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# HCM Signalized Intersection Capacity Analysis

## 23: South St & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑				↑↑↑		↑↑↑				
Volume (vph)	0	668	0	0	0	776	0	580	34	0	0	0
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				
Lane Util. Factor		0.91				0.76		0.81				
Frbp, ped/bikes		1.00				1.00		1.00				
Flpb, ped/bikes		1.00				1.00		1.00				
Frt		1.00				0.85		0.99				
Flt Protected		1.00				1.00		1.00				
Satd. Flow (prot)		5085				3610		7458				
Flt Permitted		1.00				1.00		1.00				
Satd. Flow (perm)		5085				3610		7458				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	742	0	0	0	862	0	644	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	742	0	0	0	862	0	682	0	0	0	0
Confl. Peds. (#/hr)									77			
Turn Type		NA				Prot		NA				
Protected Phases		6				6		4				
Permitted Phases												
Actuated Green, G (s)		32.3				32.3		18.2				
Effective Green, g (s)		32.3				32.3		18.2				
Actuated g/C Ratio		0.53				0.53		0.30				
Clearance Time (s)		5.0				5.0		5.0				
Vehicle Extension (s)		3.0				3.0		3.0				
Lane Grp Cap (vph)		2714				1927		2243				
v/s Ratio Prot		0.15				c0.24		c0.09				
v/s Ratio Perm												
v/c Ratio		0.27				0.45		0.30				
Uniform Delay, d1		7.7				8.6		16.3				
Progression Factor		1.00				1.00		1.00				
Incremental Delay, d2		0.1				0.2		0.1				
Delay (s)		7.8				8.8		16.4				
Level of Service		A				A		B				
Approach Delay (s)		7.8			8.8			16.4			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service		B				
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.5			Sum of lost time (s)		10.0				
Intersection Capacity Utilization			51.6%			ICU Level of Service		A				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 23: South St & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑				↑↑↑		↑↑↑				
Volume (vph)	0	1037	0	0	0	823	0	1492	83	0	0	0
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				
Lane Util. Factor		0.91				0.76		0.81				
Fr <sub>t</sub>		1.00				0.85		0.99				
Fit Protected		1.00				1.00		1.00				
Satd. Flow (prot)		5085				3610		7483				
Fit Permitted		1.00				1.00		1.00				
Satd. Flow (perm)		5085				3610		7483				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94	0.92
Adj. Flow (vph)	0	1103	0	0	0	876	0	1587	90	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1103	0	0	0	876	0	1669	0	0	0	0
Turn Type		NA				Prot		NA				
Protected Phases		6				6		4				
Permitted Phases												
Actuated Green, G (s)		47.6				47.6		41.5				
Effective Green, g (s)		47.6				47.6		41.5				
Actuated g/C Ratio		0.48				0.48		0.42				
Clearance Time (s)		5.0				5.0		5.0				
Vehicle Extension (s)		3.0				3.0		3.0				
Lane Grp Cap (vph)		2442				1733		3133				
v/s Ratio Prot		0.22				c0.24		c0.22				
v/s Ratio Perm												
v/c Ratio		0.45				0.51		0.53				
Uniform Delay, d <sub>1</sub>		17.1				17.7		21.5				
Progression Factor		1.00				1.00		1.00				
Incremental Delay, d <sub>2</sub>		0.1				0.2		0.2				
Delay (s)		17.2				17.9		21.7				
Level of Service		B				B		C				
Approach Delay (s)		17.2			17.9			21.7			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.4				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			99.1				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			46.8%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 24: Cooke St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑↑		↖	↑	↗	↖	↑	↗
Volume (vph)	0	594	83	425	704	173	27	166	39	2	26	10
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	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.95			0.86		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes		0.99			0.99		1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			0.99		0.96	1.00	1.00	0.97	1.00	
Frt		0.98			0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected		1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3431			6057		1696	1863	1507	1718	1761	
Flt Permitted		1.00			0.76		0.73	1.00	1.00	0.65	1.00	
Satd. Flow (perm)		3431			4655		1309	1863	1507	1172	1761	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	619	86	443	733	180	28	173	41	2	27	10
RTOR Reduction (vph)	0	12	0	0	26	0	0	0	30	0	7	0
Lane Group Flow (vph)	0	693	0	0	1330	0	28	173	11	2	30	0
Confl. Peds. (#/hr)			69	69		58	73		64	64		73
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6		5	2		4				8	
Permitted Phases				2			4		4	8		
Actuated Green, G (s)		21.2			30.6		15.4	15.4	15.4	15.4	15.4	
Effective Green, g (s)		21.2			30.6		15.4	15.4	15.4	15.4	15.4	
Actuated g/C Ratio		0.38			0.55		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1298			2653		359	512	414	322	484	
v/s Ratio Prot		0.20			c0.04			c0.09			0.02	
v/s Ratio Perm					c0.23		0.02		0.01	0.00		
v/c Ratio		0.53			1.21dl		0.08	0.34	0.03	0.01	0.06	
Uniform Delay, d1		13.6			7.9		15.0	16.2	14.8	14.7	15.0	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.4			0.1		0.1	0.4	0.0	0.0	0.1	
Delay (s)		14.0			8.1		15.1	16.6	14.9	14.8	15.0	
Level of Service		B			A		B	B	B	B	B	
Approach Delay (s)		14.0			8.1			16.1			15.0	
Approach LOS		B			A			B			B	

### Intersection Summary

HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

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

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 24: Cooke St & Kapiolani Blvd

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑		↵	↑	↗	↵	↑	
Volume (vph)	9	1032	52	335	732	110	77	336	180	11	38	25
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Fr't		0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5047		1770	3470		1770	1863	1583	1770	1752	
Flt Permitted		0.93		0.13	1.00		0.72	1.00	1.00	0.30	1.00	
Satd. Flow (perm)		4702		238	3470		1334	1863	1583	555	1752	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	9	1042	53	338	739	111	78	339	182	11	38	25
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	68	0	19	0
Lane Group Flow (vph)	0	1099	0	338	841	0	78	339	114	11	44	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6		5	2			4			8	
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		31.2		58.0	58.0		23.2	23.2	23.2	23.2	23.2	
Effective Green, g (s)		31.2		58.0	58.0		23.2	23.2	23.2	23.2	23.2	
Actuated g/C Ratio		0.34		0.64	0.64		0.25	0.25	0.25	0.25	0.25	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1608		517	2206		339	473	402	141	445	
v/s Ratio Prot				c0.16	0.24			c0.18			0.03	
v/s Ratio Perm		0.23		c0.26			0.06		0.07	0.02		
v/c Ratio		0.68		0.65	0.38		0.23	0.72	0.28	0.08	0.10	
Uniform Delay, d1		25.8		17.0	8.0		26.9	31.0	27.3	25.9	26.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.2		3.0	0.1		0.3	5.1	0.4	0.2	0.1	
Delay (s)		27.0		19.9	8.1		27.3	36.1	27.7	26.1	26.1	
Level of Service		C		B	A		C	D	C	C	C	
Approach Delay (s)		27.0			11.5			32.4			26.1	
Approach LOS		C			B			C			C	













### Intersection Summary

HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	91.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↵	↑↑↑		↵	↑↑	↵	↵	↑↑	↵
Volume (vph)	0	500	82	311	1148	135	83	356	60	102	733	111
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.92	1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr t		0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Fl t Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3441		1770	4967		1770	3539	1463	1770	3445	
Fl t Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3441		1770	4967		1770	3539	1463	1770	3445	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	521	85	324	1196	141	86	371	62	106	764	116
RTOR Reduction (vph)	0	12	0	0	13	0	0	0	44	0	10	0
Lane Group Flow (vph)	0	594	0	324	1324	0	86	371	18	106	870	0
Confl. Peds. (#/hr)			36	36		56	39		66	66		39
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		25.2		23.4	53.6		7.9	30.8	30.8	9.0	31.9	
Effective Green, g (s)		25.2		23.4	53.6		7.9	30.8	30.8	9.0	31.9	
Actuated g/C Ratio		0.23		0.22	0.49		0.07	0.28	0.28	0.08	0.29	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		799		382	2456		128	1005	415	146	1013	
v/s Ratio Prot		c0.17		c0.18	0.27		0.05	0.10		c0.06	c0.25	
v/s Ratio Perm									0.01			
v/c Ratio		0.74		0.85	0.54		0.67	0.37	0.04	0.73	0.86	
Uniform Delay, d1		38.6		40.8	18.9		49.0	31.0	28.1	48.5	36.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.8		15.9	0.2		13.0	0.2	0.0	16.4	7.4	
Delay (s)		42.4		56.7	19.1		62.0	31.3	28.2	64.9	43.5	
Level of Service		D		E	B		E	C	C	E	D	
Approach Delay (s)		42.4			26.4			36.0			45.8	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			108.4			Sum of lost time (s)		20.0				
Intersection Capacity Utilization			88.2%			ICU Level of Service		E				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↓			↑↑↓		↖	↑↑	↗	↖	↑↓	
Volume (vph)	0	1189	143	0	1042	144	156	628	251	249	728	136
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	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91			0.91		1.00	0.95	1.00	1.00	0.95	
Fr <sub>t</sub>		0.98			0.98		1.00	1.00	0.85	1.00	0.98	
Fl <sub>t</sub> Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5003			4992		1770	3539	1583	1770	3456	
Fl <sub>t</sub> Permitted		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5003			4992		1770	3539	1583	1770	3456	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1252	151	0	1097	152	164	661	264	262	766	143
RTOR Reduction (vph)	0	12	0	0	15	0	0	0	79	0	13	0
Lane Group Flow (vph)	0	1391	0	0	1234	0	164	661	185	262	896	0
Turn Type		NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4	
Effective Green, g (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4	
Actuated g/C Ratio		0.38			0.38		0.14	0.28	0.28	0.20	0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1883			1879		253	981	438	354	1156	
v/s Ratio Prot		c0.28			0.25		0.09	0.19		c0.15	c0.26	
v/s Ratio Perm									0.12			
v/c Ratio		0.74			0.66		0.65	0.67	0.42	0.74	0.77	
Uniform Delay, d <sub>1</sub>		27.7			26.5		41.6	33.0	30.4	38.6	30.7	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		1.6			0.8		5.6	1.8	0.7	8.1	3.3	
Delay (s)		29.2			27.4		47.2	34.9	31.1	46.7	34.0	
Level of Service		C			C		D	C	C	D	C	
Approach Delay (s)		29.2			27.4			35.8			36.9	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 26: Kamakee St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑	↘	↗
Volume (vph)	614	64	230	1558	56	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.95			0.86	1.00	1.00
Frb, ped/bikes	0.99			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.99	0.95	1.00
Satd. Flow (prot)	3471			6354	1770	1544
Flt Permitted	1.00			0.76	0.95	1.00
Satd. Flow (perm)	3471			4841	1770	1544
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	627	65	235	1590	57	67
RTOR Reduction (vph)	9	0	0	0	0	45
Lane Group Flow (vph)	683	0	0	1825	57	22
Confl. Peds. (#/hr)		40	40		227	14
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	46.2			46.2	27.4	27.4
Effective Green, g (s)	46.2			46.2	27.4	27.4
Actuated g/C Ratio	0.55			0.55	0.33	0.33
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1918			2675	580	506
v/s Ratio Prot	0.20				c0.03	
v/s Ratio Perm				c0.38		0.01
v/c Ratio	0.36			0.68	0.10	0.04
Uniform Delay, d1	10.4			13.4	19.5	19.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.7	0.1	0.0
Delay (s)	10.5			14.2	19.6	19.2
Level of Service	B			B	B	B
Approach Delay (s)	10.5			14.2	19.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 26: Kamakee St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↘	↗
Volume (vph)	1424	133	0	998	122	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.86			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	6326			3539	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	6326			3539	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1499	140	0	1051	128	296
RTOR Reduction (vph)	15	0	0	0	0	16
Lane Group Flow (vph)	1624	0	0	1051	128	280
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	27.2	27.2
Effective Green, g (s)	32.0			32.0	27.2	27.2
Actuated g/C Ratio	0.46			0.46	0.39	0.39
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2925			1636	695	622
v/s Ratio Prot	0.26			c0.30	0.07	
v/s Ratio Perm						c0.18
v/c Ratio	0.56			0.64	0.18	0.45
Uniform Delay, d1	13.5			14.2	13.7	15.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.9	0.1	0.5
Delay (s)	13.7			15.1	13.9	16.0
Level of Service	B			B	B	B
Approach Delay (s)	13.7			15.1	15.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 27: Pensacola St & Kapiolani Blvd

12/15/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↓↑↑					↘	↑↑	↗
Volume (vph)	0	556	122	118	1461	0	0	0	0	209	687	347
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	5.0	5.0
Lane Util. Factor		0.95			0.86					1.00	0.95	1.00
Frb, ped/bikes		0.99			1.00					1.00	1.00	0.94
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.97			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		3405			6377					1770	3539	1494
Flt Permitted		1.00			0.78					0.95	1.00	1.00
Satd. Flow (perm)		3405			4990					1770	3539	1494
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)	0	604	133	128	1588	0	0	0	0	227	747	377
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	0	11
Lane Group Flow (vph)	0	721	0	0	1716	0	0	0	0	227	747	366
Confl. Peds. (#/hr)			43	43								46
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		2			6						4	
Permitted Phases				6						4		4
Actuated Green, G (s)		46.8			46.8					34.8	34.8	34.8
Effective Green, g (s)		46.8			46.8					34.8	34.8	34.8
Actuated g/C Ratio		0.51			0.51					0.38	0.38	0.38
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		1739			2549					672	1344	567
v/s Ratio Prot		0.21									0.21	
v/s Ratio Perm					c0.34					0.13		c0.24
v/c Ratio		0.41			0.67					0.34	0.56	0.65
Uniform Delay, d1		13.9			16.7					20.2	22.3	23.3
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.7					0.3	0.5	2.5
Delay (s)		14.1			17.4					20.5	22.8	25.9
Level of Service		B			B					C	C	C
Approach Delay (s)		14.1			17.4			0.0			23.3	
Approach LOS		B			B			A			C	













### Intersection Summary

HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 27: Pensacola St & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑					↘	↑↑	↗
Volume (vph)	0	1525	192	0	850	0	0	0	0	305	765	172
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	5.0	5.0
Lane Util. Factor		0.86			0.95					1.00	0.95	1.00
Frt		0.98			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		6300			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		6300			3539					1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1589	200	0	885	0	0	0	0	318	797	179
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	62
Lane Group Flow (vph)	0	1770	0	0	885	0	0	0	0	318	797	117
Turn Type		NA			NA					Perm	NA	Perm
Protected Phases		2			6						4	
Permitted Phases										4		4
Actuated Green, G (s)		40.7			40.7					31.6	31.6	31.6
Effective Green, g (s)		40.7			40.7					31.6	31.6	31.6
Actuated g/C Ratio		0.49			0.49					0.38	0.38	0.38
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3115			1750					679	1358	607
v/s Ratio Prot		c0.28			0.25						c0.23	
v/s Ratio Perm										0.18		0.07
v/c Ratio		0.57			0.51					0.47	0.59	0.19
Uniform Delay, d1		14.6			14.0					19.0	20.2	16.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.2					0.5	0.7	0.2
Delay (s)		14.9			14.3					19.6	20.8	17.0
Level of Service		B			B					B	C	B
Approach Delay (s)		14.9			14.3			0.0			20.0	
Approach LOS		B			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			82.3			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			54.8%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 28: Piikoi St & Kapiolani Blvd

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑↑		↖	↑↑↑	↗			
Volume (vph)	0	762	59	37	1570	204	61	735	51	0	0	0
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	5.0	5.0			
Lane Util. Factor		0.95			0.86		1.00	0.91	1.00			
Frbp, ped/bikes		1.00			1.00		1.00	1.00	0.91			
Flpb, ped/bikes		1.00			1.00		0.94	1.00	1.00			
Frt		0.99			0.98		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3493			6266		1670	5085	1441			
Flt Permitted		1.00			0.89		0.95	1.00	1.00			
Satd. Flow (perm)		3493			5599		1670	5085	1441			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	837	65	41	1725	224	67	808	56	0	0	0
RTOR Reduction (vph)	0	5	0	0	5	0	0	0	40	0	0	0
Lane Group Flow (vph)	0	897	0	0	1985	0	67	808	16	0	0	0
Confl. Peds. (#/hr)			25	25		31	64		91			
Turn Type		NA		Perm	NA		Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases				6			8		8			
Actuated Green, G (s)		48.9			48.9		22.8	22.8	22.8			
Effective Green, g (s)		48.9			48.9		22.8	22.8	22.8			
Actuated g/C Ratio		0.60			0.60		0.28	0.28	0.28			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2090			3351		466	1419	402			
v/s Ratio Prot		0.26						c0.16				
v/s Ratio Perm					c0.35		0.04		0.01			
v/c Ratio		0.43			0.59		0.14	0.57	0.04			
Uniform Delay, d1		8.9			10.2		22.1	25.2	21.5			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.1			0.3		0.1	0.5	0.0			
Delay (s)		9.0			10.5		22.3	25.8	21.5			
Level of Service		A			B		C	C	C			
Approach Delay (s)		9.0			10.5			25.3			0.0	
Approach LOS		A			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.7				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			81.7				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			84.0%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 28: Piikoi St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑		↖	↑↑↑	↗			
Volume (vph)	0	1678	126	0	696	257	174	1173	204	0	0	0
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	5.0	5.0			
Lane Util. Factor		0.86			0.95		1.00	0.91	1.00			
Frt		0.99			0.96		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		6341			3396		1770	5085	1583			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		6341			3396		1770	5085	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1785	134	0	740	273	185	1248	217	0	0	0
RTOR Reduction (vph)	0	10	0	0	9	0	0	0	11	0	0	0
Lane Group Flow (vph)	0	1909	0	0	1004	0	185	1248	206	0	0	0
Turn Type		NA			NA		Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)		48.0			48.0		39.3	39.3	39.3			
Effective Green, g (s)		48.0			48.0		39.3	39.3	39.3			
Actuated g/C Ratio		0.49			0.49		0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		3128			1675		714	2053	639			
v/s Ratio Prot		c0.30			0.30			c0.25				
v/s Ratio Perm							0.10		0.13			
v/c Ratio		0.61			0.60		0.26	0.61	0.32			
Uniform Delay, d1		17.9			17.7		19.3	22.9	19.9			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.4			0.6		0.2	0.5	0.3			
Delay (s)		18.2			18.3		19.5	23.4	20.2			
Level of Service		B			B		B	C	C			
Approach Delay (s)		18.2			18.3			22.6			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.8				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			97.3				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			58.5%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 29: Kona Iki St & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑↑	↑	↑
Volume (vph)	648	99	42	1725	17	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.95			0.86	1.00	
Frbp, ped/bikes	0.98			1.00	0.98	
Ftpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			1.00	0.99	
Satd. Flow (prot)	3398			6394	1626	
Flt Permitted	1.00			0.90	0.99	
Satd. Flow (perm)	3398			5731	1626	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	697	106	45	1855	18	42
RTOR Reduction (vph)	8	0	0	0	37	0
Lane Group Flow (vph)	795	0	0	1900	23	0
Confl. Peds. (#/hr)		87	87			25
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	51.9			51.9	7.5	
Effective Green, g (s)	51.9			51.9	7.5	
Actuated g/C Ratio	0.75			0.75	0.11	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2541			4285	175	
v/s Ratio Prot	0.23				c0.01	
v/s Ratio Perm				c0.33		
v/c Ratio	0.31			0.44	0.13	
Uniform Delay, d1	2.9			3.3	28.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.1	0.3	
Delay (s)	3.0			3.4	28.3	
Level of Service	A			A	C	
Approach Delay (s)	3.0			3.4	28.3	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
 29: Kona Iki St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↘	
Volume (vph)	1648	161	0	772	161	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Fr <sub>t</sub>	0.99			1.00	0.95	
Fl <sub>t</sub> Protected	1.00			1.00	0.97	
Satd. Flow (prot)	6322			3539	1711	
Fl <sub>t</sub> Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	6322			3539	1711	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1665	163	0	780	163	107
RTOR Reduction (vph)	15	0	0	0	11	0
Lane Group Flow (vph)	1813	0	0	780	259	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	8	
Permitted Phases						
Actuated Green, G (s)	38.2			38.2	27.3	
Effective Green, g (s)	38.2			38.2	27.3	
Actuated g/C Ratio	0.51			0.51	0.36	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3198			1790	618	
v/s Ratio Prot	c0.29			0.22	c0.15	
v/s Ratio Perm						
v/c Ratio	0.57			0.44	0.42	
Uniform Delay, d <sub>1</sub>	12.9			11.8	18.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d <sub>2</sub>	0.2			0.2	0.5	
Delay (s)	13.2			12.0	18.6	
Level of Service	B			B	B	
Approach Delay (s)	13.2			12.0	18.6	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			13.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			75.5		Sum of lost time (s)	10.0
Intersection Capacity Utilization			50.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 30: Kapiolani Blvd & Keeaumoku St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑↑			↑↑↑	↑		↑↑↑	
Volume (vph)	0	478	84	0	1670	107	0	128	9	110	335	56
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	5.0		5.0	
Lane Util. Factor		0.95			0.86			*0.50	1.00		0.91	
Frbp, ped/bikes		0.97			0.99			1.00	0.78		0.97	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		0.96	
Frt		0.98			0.99			1.00	0.85		0.98	
Flt Protected		1.00			1.00			1.00	1.00		0.99	
Satd. Flow (prot)		3342			6291			2794	1230		4613	
Flt Permitted		1.00			1.00			1.00	1.00		0.81	
Satd. Flow (perm)		3342			6291			2794	1230		3763	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	493	87	0	1722	110	0	132	9	113	345	58
RTOR Reduction (vph)	0	14	0	0	9	0	0	0	6	0	4	0
Lane Group Flow (vph)	0	566	0	0	1823	0	0	132	3	0	512	0
Confl. Peds. (#/hr)			240			155			220	261		297
Turn Type		NA			NA			NA	Perm	pm+pt		NA
Protected Phases		2			6			8		7		4
Permitted Phases									8	4		
Actuated Green, G (s)		43.0			43.0			28.3	28.3		38.3	
Effective Green, g (s)		43.0			43.0			28.3	28.3		38.3	
Actuated g/C Ratio		0.47			0.47			0.31	0.31		0.42	
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1573			2962			866	381		1625	
v/s Ratio Prot		0.17			c0.29			0.05			c0.02	
v/s Ratio Perm									0.00		c0.11	
v/c Ratio		0.36			0.62			0.15	0.01		0.32	
Uniform Delay, d1		15.4			18.0			22.8	21.8		17.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1			0.4			0.1	0.0		0.1	
Delay (s)		15.5			18.4			22.9	21.8		17.8	
Level of Service		B			B			C	C		B	
Approach Delay (s)		15.5			18.4			22.8			17.8	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 30: Kapiolani Blvd & Keeaumoku St

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	1513	119	0	721	108	0	556	31	228	624	59
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	5.0		5.0	
Lane Util. Factor		0.86			0.95			0.91	1.00		0.91	
Fr <sub>t</sub>		0.99			0.98			1.00	0.85		0.99	
Fl <sub>t</sub> Protected		1.00			1.00			1.00	1.00		0.99	
Satd. Flow (prot)		6327			3470			5085	1583		4974	
Fl <sub>t</sub> Permitted		0.81			1.00			1.00	1.00		0.70	
Satd. Flow (perm)		5131			3470			5085	1583		3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	81	1576	124	0	751	112	0	579	32	238	650	61
RTOR Reduction (vph)	0	10	0	0	10	0	0	0	23	0	7	0
Lane Group Flow (vph)	0	1771	0	0	853	0	0	579	9	0	942	0
Turn Type	Perm	NA			NA			NA	Perm	pm+pt	NA	
Protected Phases		2			6			8		7	4	
Permitted Phases	2								8	4		
Actuated Green, G (s)		47.6			47.6			28.5	28.5		39.3	
Effective Green, g (s)		47.6			47.6			28.5	28.5		39.3	
Actuated g/C Ratio		0.49			0.49			0.29	0.29		0.41	
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		2520			1704			1495	465		1513	
v/s Ratio Prot					0.25			0.11			c0.04	
v/s Ratio Perm		c0.35							0.01		c0.22	
v/c Ratio		0.70			0.50			0.39	0.02		0.62	
Uniform Delay, d <sub>1</sub>		19.2			16.6			27.2	24.3		22.9	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d <sub>2</sub>		0.9			0.2			0.2	0.0		0.8	
Delay (s)		20.1			16.9			27.4	24.3		23.7	
Level of Service		C			B			C	C		C	
Approach Delay (s)		20.1			16.9			27.2			23.7	
Approach LOS		C			B			C			C	

### Intersection Summary













HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 31: Mahukona St/Kaheka St & Kapiolani Blvd

12/15/2014


























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑↑			↑↑			↑↑	↗
Volume (vph)	0	527	73	6	1681	131	13	153	42	73	152	83
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			5.0	5.0
Lane Util. Factor		0.95			0.86			0.95			0.95	1.00
Frbp, ped/bikes		0.99			0.99			0.96			1.00	0.91
Flpb, ped/bikes		1.00			1.00			1.00			0.96	1.00
Frt		0.98			0.99			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.98	1.00
Satd. Flow (prot)		3426			6277			3285			3341	1437
Flt Permitted		1.00			0.93			0.93			0.79	1.00
Satd. Flow (perm)		3426			5844			3069			2675	1437
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	561	78	6	1788	139	14	163	45	78	162	88
RTOR Reduction (vph)	0	11	0	0	12	0	0	18	0	0	0	12
Lane Group Flow (vph)	0	628	0	0	1921	0	0	205	0	0	240	76
Confl. Peds. (#/hr)			101	101		131	92		197	197		92
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)		46.0			46.0			30.4			30.4	30.4
Effective Green, g (s)		46.0			46.0			30.4			30.4	30.4
Actuated g/C Ratio		0.53			0.53			0.35			0.35	0.35
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1824			3111			1079			941	505
v/s Ratio Prot		0.18										
v/s Ratio Perm					c0.33			0.07			c0.09	0.05
v/c Ratio		0.34			0.62			0.19			0.26	0.15
Uniform Delay, d1		11.6			14.1			19.4			19.9	19.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.1			0.4			0.1			0.1	0.1
Delay (s)		11.7			14.4			19.5			20.1	19.3
Level of Service		B			B			B			C	B
Approach Delay (s)		11.7			14.4			19.5			19.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 31: Mahukona St/Kaheka St & Kapiolani Blvd

12/15/2014

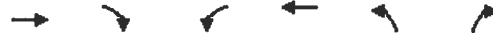
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			 			  			  	 
Volume (vph)	33	1615	81	0	782	263	19	311	77	120	390	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	5.0
Lane Util. Factor		0.86			0.95			0.95			0.95	1.00
Fr <sub>t</sub>		0.99			0.96			0.97			1.00	0.85
Fl <sub>t</sub> Protected		1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)		6357			3406			3431			3498	1583
Fl <sub>t</sub> Permitted		0.89			1.00			0.92			0.71	1.00
Satd. Flow (perm)		5639			3406			3156			2501	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	1718	86	0	832	280	20	331	82	128	415	79
RTOR Reduction (vph)	0	6	0	0	29	0	0	8	0	0	0	50
Lane Group Flow (vph)	0	1833	0	0	1083	0	0	425	0	0	543	29
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		4
Actuated Green, G (s)		45.0			45.0			32.4			32.4	32.4
Effective Green, g (s)		45.0			45.0			32.4			32.4	32.4
Actuated g/C Ratio		0.51			0.51			0.37			0.37	0.37
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2903			1753			1169			927	586
v/s Ratio Prot					0.32							
v/s Ratio Perm		c0.33						0.13			c0.22	0.02
v/c Ratio		0.63			0.62			0.36			0.59	0.05
Uniform Delay, d <sub>1</sub>		15.2			15.1			20.0			22.1	17.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d <sub>2</sub>		0.5			0.7			0.2			1.0	0.0
Delay (s)		15.7			15.7			20.2			23.1	17.7
Level of Service		B			B			C			C	B
Approach Delay (s)		15.7			15.7			20.2			22.4	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 32: Atkinson Dr & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↔↑↑		↗↗↗
Volume (vph)	553	70	928	1807	0	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0		5.0
Lane Util. Factor	0.95		0.86	0.86		0.76
Frbp, ped/bikes	0.99		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	0.98		1.00	1.00		0.85
Flt Protected	1.00		0.95	0.99		1.00
Satd. Flow (prot)	3459		1516	4754		3610
Flt Permitted	1.00		0.29	0.69		1.00
Satd. Flow (perm)	3459		465	3294		3610
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	582	74	977	1902	0	259
RTOR Reduction (vph)	6	0	0	0	0	0
Lane Group Flow (vph)	650	0	547	2332	0	259
Confl. Peds. (#/hr)		72	72			
Turn Type	NA		pm+pt	NA		pt+ov
Protected Phases	2		1 8	6		1 8
Permitted Phases			6			
Actuated Green, G (s)	28.6		62.8	62.8		29.2
Effective Green, g (s)	28.6		62.8	62.8		29.2
Actuated g/C Ratio	0.42		0.93	0.93		0.43
Clearance Time (s)	5.0			5.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1459		883	3679		1554
v/s Ratio Prot	0.19		0.27	c0.27		0.07
v/s Ratio Perm			0.31	c0.31		
v/c Ratio	0.45		0.62	0.63		0.17
Uniform Delay, d1	14.0		4.2	0.4		11.8
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2		1.3	0.4		0.1
Delay (s)	14.2		5.5	0.8		11.9
Level of Service	B		A	A		B
Approach Delay (s)	14.2			1.7	11.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 32: Atkinson Dr & Kapiolani Blvd













12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑			↑↑		↑↑↑↑
Volume (vph)	1537	228	0	1088	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0		5.0
Lane Util. Factor	0.86			0.95		0.64
Frt	0.98			1.00		0.85
Flt Protected	1.00			1.00		1.00
Satd. Flow (prot)	6283			3539		4053
Flt Permitted	1.00			1.00		1.00
Satd. Flow (perm)	6283			3539		4053
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1568	233	0	1110	0	796
RTOR Reduction (vph)	22	0	0	0	0	0
Lane Group Flow (vph)	1779	0	0	1110	0	796
Turn Type	NA			NA		Prot
Protected Phases	2			6		8
Permitted Phases						
Actuated Green, G (s)	38.4			38.4		28.6
Effective Green, g (s)	38.4			38.4		28.6
Actuated g/C Ratio	0.50			0.50		0.37
Clearance Time (s)	5.0			5.0		5.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	3133			1764		1505
v/s Ratio Prot	0.28			c0.31		c0.20
v/s Ratio Perm						
v/c Ratio	0.57			0.63		0.53
Uniform Delay, d1	13.5			14.1		18.9
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.2			0.7		0.3
Delay (s)	13.7			14.8		19.3
Level of Service	B			B		B
Approach Delay (s)	13.7			14.8	19.3	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			15.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			77.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			48.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

## 33: Kalakaua Ave & Kapiolani Blvd

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑↑		↑↑	↑↑			↑↑↑	
Volume (vph)	0	354	450	0	2202	197	509	702	68	0	592	60
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		5.0	5.0			5.0	
Lane Util. Factor		0.91	0.91		0.86		0.97	0.95			0.91	
Frbp, ped/bikes		1.00	1.00		0.98		1.00	0.99			0.98	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		0.95	0.85		0.99		1.00	0.99			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)		3208	1441		6205		3433	3460			4919	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (perm)		3208	1441		6205		3433	3460			4919	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	369	469	0	2294	205	530	731	71	0	617	62
RTOR Reduction (vph)	0	47	5	0	10	0	0	6	0	0	9	0
Lane Group Flow (vph)	0	528	258	0	2489	0	530	796	0	0	670	0
Confl. Peds. (#/hr)						153			76			150
Turn Type		NA	pt+ov		NA		Prot	NA			NA	
Protected Phases		2	2 3		6		3	8			4	
Permitted Phases												
Actuated Green, G (s)		65.1	95.9		65.1		25.8	60.9			30.1	
Effective Green, g (s)		65.1	95.9		65.1		25.8	60.9			30.1	
Actuated g/C Ratio		0.48	0.71		0.48		0.19	0.45			0.22	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1535	1016		2970		651	1549			1088	
v/s Ratio Prot		0.16	0.18		c0.40		c0.15	0.23			c0.14	
v/s Ratio Perm												
v/c Ratio		0.34	0.25		0.84		0.81	0.51			0.62	
Uniform Delay, d1		22.1	7.2		30.9		52.8	26.9			47.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1	0.1		2.2		7.7	0.3			1.0	
Delay (s)		22.3	7.3		33.1		60.5	27.2			48.8	
Level of Service		C	A		C		E	C			D	
Approach Delay (s)		17.6			33.1			40.5			48.8	
Approach LOS		B			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.5				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			136.0				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			87.8%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 33: Kalakaua Ave & Kapiolani Blvd













12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑			↑↑			↑↑↑		
Volume (vph)	0	1562	752	0	978	152	0	884	51	0	720	110	
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			5.0			5.0		
Lane Util. Factor		0.81	0.81		0.95			0.95			0.91		
Frt		0.97	0.85		0.98			0.99			0.98		
Flt Protected		1.00	1.00		1.00			1.00			1.00		
Satd. Flow (prot)		5874	1282		3468			3510			4984		
Flt Permitted		1.00	1.00		1.00			1.00			1.00		
Satd. Flow (perm)		5874	1282		3468			3510			4984		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	1594	767	0	998	155	0	902	52	0	735	112	
RTOR Reduction (vph)	0	26	45	0	8	0	0	3	0	0	16	0	
Lane Group Flow (vph)	0	1913	377	0	1145	0	0	951	0	0	831	0	
Turn Type		NA	Prot		NA			NA			NA		
Protected Phases		2	2		6			8			4		
Permitted Phases													
Actuated Green, G (s)		61.6	61.6		61.6			41.4			41.4		
Effective Green, g (s)		61.6	61.6		61.6			41.4			41.4		
Actuated g/C Ratio		0.55	0.55		0.55			0.37			0.37		
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0		
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		3202	698		1890			1285			1825		
v/s Ratio Prot		0.33	0.29		c0.33			c0.27			0.17		
v/s Ratio Perm													
v/c Ratio		0.60	0.54		0.61			0.74			0.46		
Uniform Delay, d1		17.3	16.6		17.5			31.1			27.2		
Progression Factor		1.00	1.00		1.00			1.00			1.00		
Incremental Delay, d2		0.3	0.8		0.6			2.3			0.2		
Delay (s)		17.6	17.4		18.0			33.4			27.4		
Level of Service		B	B		B			C			C		
Approach Delay (s)		17.6			18.0			33.4			27.4		
Approach LOS		B			B			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.66										
Actuated Cycle Length (s)			113.0									Sum of lost time (s)	10.0
Intersection Capacity Utilization			66.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 34: McCully St & Kapiolani Blvd

12/15/2014


























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↵	↑↑↑		↵	↑↑	↗	↵	↑↑	
Volume (vph)	0	415	23	263	2249	16	139	455	222	38	534	72
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.86		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	1.00	0.88	1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.98	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3482		1770	6396		1770	3539	1387	1770	3432	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3482		1770	6396		1770	3539	1387	1770	3432	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	446	25	283	2418	17	149	489	239	41	574	77
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	164	0	8	0
Lane Group Flow (vph)	0	468	0	283	2435	0	149	489	75	41	643	0
Confl. Peds. (#/hr)			105			74			94			81
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		37.5		25.7	68.2		15.7	40.5	40.5	5.9	30.7	
Effective Green, g (s)		37.5		25.7	68.2		15.7	40.5	40.5	5.9	30.7	
Actuated g/C Ratio		0.29		0.20	0.53		0.12	0.31	0.31	0.05	0.24	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1007		350	3365		214	1105	433	80	812	
v/s Ratio Prot		0.13		c0.16	c0.38		c0.08	0.14		0.02	c0.19	
v/s Ratio Perm									0.05			
v/c Ratio		0.46		0.81	0.72		0.70	0.44	0.17	0.51	0.79	
Uniform Delay, d1		37.8		49.6	23.5		54.7	35.5	32.4	60.4	46.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3		12.9	0.8		9.4	0.3	0.2	5.4	5.3	
Delay (s)		38.2		62.5	24.3		64.1	35.8	32.6	65.9	51.8	
Level of Service		D		E	C		E	D	C	E	D	
Approach Delay (s)		38.2			28.3			39.7			52.6	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			129.6			Sum of lost time (s)		20.0				
Intersection Capacity Utilization			88.0%			ICU Level of Service		E				
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 34: McCully St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	160	1373	91	0	814	38	200	588	307	39	588	61
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91			0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99			0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5038			3515		1770	3539	1583	1770	3489	
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5038			3515		1770	3539	1583	1770	3489	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	163	1401	93	0	831	39	204	600	313	40	600	62
RTOR Reduction (vph)	0	5	0	0	2	0	0	0	61	0	5	0
Lane Group Flow (vph)	163	1489	0	0	868	0	204	600	252	40	657	0
Turn Type	Prot	NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	15.6	57.5			36.9		18.8	42.8	42.8	5.8	29.8	
Effective Green, g (s)	15.6	57.5			36.9		18.8	42.8	42.8	5.8	29.8	
Actuated g/C Ratio	0.13	0.47			0.30		0.16	0.35	0.35	0.05	0.25	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	228	2392			1071		274	1250	559	84	858	
v/s Ratio Prot	0.09	c0.30			c0.25		c0.12	0.17		0.02	c0.19	
v/s Ratio Perm									0.16			
v/c Ratio	0.71	0.62			0.81		0.74	0.48	0.45	0.48	0.77	
Uniform Delay, d1	50.6	23.7			38.9		48.9	30.5	30.1	56.2	42.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.2	0.5			4.7		10.5	0.3	0.6	4.2	4.1	
Delay (s)	60.8	24.2			43.6		59.3	30.8	30.7	60.4	46.5	
Level of Service	E	C			D		E	C	C	E	D	
Approach Delay (s)		27.8			43.6			36.0			47.3	
Approach LOS		C			D			D			D	

Intersection Summary













HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	121.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 35: Kapiolani Blvd & Isenberg St

12/15/2014




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑↑			↑	↑		↑	↑
Volume (vph)	0	672	1	0	2494	21	36	42	35	62	0	67
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	5.0		5.0	5.0
Lane Util. Factor		0.95			0.86			1.00	1.00		1.00	1.00
Frbp, ped/bikes		1.00			1.00			1.00	0.93		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		0.95	1.00
Frt		1.00			1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00			1.00			0.98	1.00		0.95	1.00
Satd. Flow (prot)		3538			6398			1821	1471		1674	1583
Flt Permitted		1.00			1.00			0.83	1.00		0.70	1.00
Satd. Flow (perm)		3538			6398			1549	1471		1242	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	693	1	0	2571	22	37	43	36	64	0	69
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	31	0	0	14
Lane Group Flow (vph)	0	694	0	0	2593	0	0	80	5	0	64	55
Confl. Peds. (#/hr)						8			62	62		
Turn Type		NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)		79.4			79.4			14.4	14.4		14.4	14.4
Effective Green, g (s)		79.4			79.4			14.4	14.4		14.4	14.4
Actuated g/C Ratio		0.76			0.76			0.14	0.14		0.14	0.14
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2706			4894			214	204		172	219
v/s Ratio Prot		0.20			c0.41							
v/s Ratio Perm								c0.05	0.00		0.05	0.03
v/c Ratio		0.26			0.53			0.37	0.02		0.37	0.25
Uniform Delay, d1		3.6			4.8			40.6	38.6		40.6	39.9
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1			1.1	0.0		1.4	0.6
Delay (s)		3.6			4.9			41.7	38.7		42.0	40.5
Level of Service		A			A			D	D		D	D
Approach Delay (s)		3.6			4.9			40.8			41.2	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.2				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			103.8				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			77.0%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 35: Kapiolani Blvd & Isenberg St

12/15/2014






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1613	1	0	835	60	16	20	12	132	51	37
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			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.91			0.91			1.00	1.00		1.00	1.00
Frt	1.00	1.00			0.99			1.00	0.85		1.00	0.85
Fit Protected	0.95	1.00			1.00			0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	5085			5034			1822	1583		1798	1583
Fit Permitted	0.28	1.00			1.00			0.86	1.00		0.76	1.00
Satd. Flow (perm)	519	5085			5034			1594	1583		1420	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	1698	1	0	879	63	17	21	13	139	54	39
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	10	0	0	29
Lane Group Flow (vph)	49	1699	0	0	936	0	0	38	3	0	193	10
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2						8		8	4		4
Actuated Green, G (s)	43.7	43.7			43.7			19.3	19.3		19.3	19.3
Effective Green, g (s)	43.7	43.7			43.7			19.3	19.3		19.3	19.3
Actuated g/C Ratio	0.60	0.60			0.60			0.26	0.26		0.26	0.26
Clearance Time (s)	5.0	5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	310	3044			3013			421	418		375	418
v/s Ratio Prot		c0.33			0.19							
v/s Ratio Perm	0.09							0.02	0.00		c0.14	0.01
v/c Ratio	0.16	0.56			0.31			0.09	0.01		0.51	0.02
Uniform Delay, d1	6.5	8.8			7.2			20.2	19.8		22.9	19.9
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.2			0.1			0.1	0.0		1.2	0.0
Delay (s)	6.7	9.1			7.3			20.3	19.8		24.1	19.9
Level of Service	A	A			A			C	B		C	B
Approach Delay (s)		9.0			7.3			20.2			23.4	
Approach LOS		A			A			C			C	

### Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 36: University Ave & Kapiolani Blvd

12/15/2014






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	425	113	119	2297	72	211	327	138	163	232	49
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	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	0.86		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.96		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1784		1770	6366		1770	3201		1770	3539	1583
Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1784		1770	6366		1770	3201		1770	3539	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)	168	462	123	129	2497	78	229	355	150	177	252	53
RTOR Reduction (vph)	0	6	0	0	3	0	0	35	0	0	0	45
Lane Group Flow (vph)	168	579	0	129	2572	0	229	470	0	177	252	8
Confl. Peds. (#/hr)			34			50			88	88		
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												8
Actuated Green, G (s)	13.1	57.5		12.8	57.2		21.8	28.8		14.1	21.1	21.1
Effective Green, g (s)	13.1	57.5		12.8	57.2		21.8	28.8		14.1	21.1	21.1
Actuated g/C Ratio	0.10	0.43		0.10	0.43		0.16	0.22		0.11	0.16	0.16
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	174	770		170	2733		289	692		187	560	250
v/s Ratio Prot	c0.09	0.32		0.07	c0.40		c0.13	c0.15		c0.10	0.07	
v/s Ratio Perm												0.01
v/c Ratio	0.97	0.75		0.76	0.94		0.79	0.68		0.95	0.45	0.03
Uniform Delay, d1	59.8	31.8		58.7	36.4		53.5	48.0		59.2	50.8	47.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	57.6	4.2		17.5	7.4		13.8	2.7		50.0	0.6	0.1
Delay (s)	117.4	36.0		76.2	43.8		67.3	50.6		109.2	51.4	47.5
Level of Service	F	D		E	D		E	D		F	D	D
Approach Delay (s)		54.2			45.4			55.8			72.2	
Approach LOS		D			D			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			51.2				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			133.2				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			98.1%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 36: University Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	1385	198	118	878	17	64	140	51	88	116	96
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	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00		1.00	0.96		1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4990		1770	5071		1770	3398		1770	3539	1583
Fl <sub>t</sub> Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4990		1770	5071		1770	3398		1770	3539	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	178	1413	202	120	896	17	65	143	52	90	118	98
RTOR Reduction (vph)	0	12	0	0	1	0	0	29	0	0	0	80
Lane Group Flow (vph)	178	1603	0	120	912	0	65	166	0	90	118	18
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												8
Actuated Green, G (s)	16.9	46.4		12.8	42.3		7.2	17.9		8.5	19.2	19.2
Effective Green, g (s)	16.9	46.4		12.8	42.3		7.2	17.9		8.5	19.2	19.2
Actuated g/C Ratio	0.16	0.44		0.12	0.40		0.07	0.17		0.08	0.18	0.18
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	283	2192		214	2031		120	575		142	643	287
v/s Ratio Prot	c0.10	c0.32		0.07	0.18		0.04	c0.05		c0.05	0.03	
v/s Ratio Perm												0.01
v/c Ratio	0.63	0.73		0.56	0.45		0.54	0.29		0.63	0.18	0.06
Uniform Delay, d <sub>1</sub>	41.4	24.4		43.7	23.1		47.6	38.3		47.0	36.6	35.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	4.3	1.3		3.3	0.2		4.9	0.3		8.9	0.1	0.1
Delay (s)	45.8	25.7		47.1	23.3		52.5	38.6		56.0	36.7	35.8
Level of Service	D	C		D	C		D	D		E	D	D
Approach Delay (s)		27.7			26.1			42.1			42.1	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

	→	↘	↗	←	↖	↗	↖	↑	↘	↗	↓	↘
Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↗		↑↑↑	↖		↘	↕			↖↑	↘
Volume (vph)	425	164	52	2165	358	22	305	170	11	88	211	124
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	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	0.88		0.91	1.00		0.95	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.94		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Fr t	1.00	0.85		1.00	0.85		1.00	0.99			1.00	0.85
Fl t Protected	1.00	1.00		1.00	1.00		0.95	0.99			0.99	1.00
Satd. Flow (prot)	1863	2787		5085	1484		1681	1728			3488	1583
Fl t Permitted	1.00	1.00		1.00	1.00		0.95	0.99			0.99	1.00
Satd. Flow (perm)	1863	2787		5085	1484		1681	1728			3488	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	443	171	54	2255	373	23	318	177	11	92	220	129
RTOR Reduction (vph)	0	51	0	0	0	0	0	1	0	0	0	82
Lane Group Flow (vph)	443	174	0	2255	373	0	261	267	0	0	312	64
Confl. Peds. (#/hr)			20		33				20			
Turn Type	NA	Prot		NA	Perm	Split	Split	NA		Split	NA	Prot
Protected Phases	2	2		6		8	8	8		4	4	4
Permitted Phases					6							
Actuated Green, G (s)	71.3	71.3		71.3	71.3		25.9	25.9			20.1	20.1
Effective Green, g (s)	71.3	71.3		71.3	71.3		25.9	25.9			20.1	20.1
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.16	0.16			0.13	0.13
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	843	1262		2303	672		276	284			445	202
v/s Ratio Prot	0.24	0.06		c0.44			c0.16	0.15			c0.09	0.04
v/s Ratio Perm					0.25							
v/c Ratio	0.53	0.14		0.98	0.56		0.95	0.94			0.70	0.32
Uniform Delay, d1	30.9	25.1		42.3	31.5		65.1	65.0			65.8	62.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.6	0.1		14.0	1.0		39.3	37.7			4.9	0.9
Delay (s)	31.5	25.2		56.3	32.5		104.4	102.7			70.7	63.3
Level of Service	C	C		E	C		F	F			E	E
Approach Delay (s)	29.4			52.9			103.5				68.4	
Approach LOS	C			D			F				E	

## Intersection Summary

HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	157.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations			WT		
Volume (vph)	16	136	122	57	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			5.0		
Lane Util. Factor			0.97		
Frb, ped/bikes			0.98		
Fipb, ped/bikes			1.00		
Frt			0.95		
Flt Protected			0.97		
Satd. Flow (prot)			3249		
Flt Permitted			0.97		
Satd. Flow (perm)			3249		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	142	127	59	75
RTOR Reduction (vph)	0	0	82	0	0
Lane Group Flow (vph)	0	0	321	0	0
Confl. Peds. (#/hr)	20				20
Turn Type		Prot	Prot		
Protected Phases		3	3		
Permitted Phases					
Actuated Green, G (s)			20.1		
Effective Green, g (s)			20.1		
Actuated g/C Ratio			0.13		
Clearance Time (s)			5.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			414		
v/s Ratio Prot			c0.10		
v/s Ratio Perm					
v/c Ratio			0.78		
Uniform Delay, d1			66.5		
Progression Factor			1.00		
Incremental Delay, d2			8.8		
Delay (s)			75.3		
Level of Service			E		
Approach Delay (s)			75.3		
Approach LOS			E		
<b>Intersection Summary</b>					

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗	↘	↑	↗	↘	↓	↙	
Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↑↑	↗↘		↑↑↑	↗		↘	↕			↖↑	↙	
Volume (vph)	971	512	78	792	295	33	156	273	31	80	279	104	
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	5.0		5.0	5.0			5.0	5.0	
Lane Util. Factor	0.95	0.88		0.91	1.00		0.95	0.95			0.95	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.95		1.00	1.00			1.00	1.00	
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	0.99			1.00	0.85	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00	
Satd. Flow (prot)	3539	2787		5085	1498		1681	1732			3500	1583	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00	
Satd. Flow (perm)	3539	2787		5085	1498		1681	1732			3500	1583	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	991	522	80	808	301	34	159	279	32	82	285	106	
RTOR Reduction (vph)	0	63	0	0	203	0	0	3	0	0	0	80	
Lane Group Flow (vph)	991	539	0	808	98	0	177	324	0	0	367	40	
Confl. Peds. (#/hr)			20		34				20				
Turn Type	NA	Prot		NA	Perm	Split	Split	NA		Split	NA	Prot	
Protected Phases	2	2		6		8	8	8		4	4	4	
Permitted Phases					6								
Actuated Green, G (s)	45.3	45.3		45.3	45.3		28.3	28.3			21.3	21.3	
Effective Green, g (s)	45.3	45.3		45.3	45.3		28.3	28.3			21.3	21.3	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.20	0.20			0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	1157	911		1663	489		343	353			538	243	
v/s Ratio Prot	c0.28	0.19		0.16			0.11	c0.19			c0.10	0.03	
v/s Ratio Perm					0.07								
v/c Ratio	0.86	0.59		0.49	0.20		0.52	0.92			0.68	0.17	
Uniform Delay, d1	43.6	38.9		37.3	33.6		49.0	54.0			55.4	50.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	
Incremental Delay, d2	6.4	1.0		0.2	0.2		1.3	27.7			3.6	0.3	
Delay (s)	50.0	39.9		37.5	33.8		50.3	81.7			59.0	51.2	
Level of Service	D	D		D	C		D	F			E	D	
Approach Delay (s)	46.2			36.5				70.7			57.1		
Approach LOS	D			D				E			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			49.3									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			138.5									Sum of lost time (s)	20.0
Intersection Capacity Utilization			100.8%									ICU Level of Service	G
Analysis Period (min)			15										






c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

					
Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations			LT		
Volume (vph)	14	51	129	101	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			5.0		
Lane Util. Factor			0.97		
Frbp, ped/bikes			0.96		
Flpb, ped/bikes			1.00		
Frt			0.91		
Flt Protected			0.98		
Satd. Flow (prot)			3107		
Flt Permitted			0.98		
Satd. Flow (perm)			3107		
Peak-hour factor, PHF	0.98	0.92	0.98	0.98	0.98
Adj. Flow (vph)	14	55	132	103	174
RTOR Reduction (vph)	0	0	78	0	0
Lane Group Flow (vph)	0	0	386	0	0
Confl. Peds. (#/hr)	20				20
Turn Type		Prot	Prot		
Protected Phases		3	3		
Permitted Phases					
Actuated Green, G (s)			23.6		
Effective Green, g (s)			23.6		
Actuated g/C Ratio			0.17		
Clearance Time (s)			5.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			529		
v/s Ratio Prot			0.12		
v/s Ratio Perm					
v/c Ratio			0.73		
Uniform Delay, d1			54.4		
Progression Factor			1.00		
Incremental Delay, d2			5.0		
Delay (s)			59.4		
Level of Service			E		
Approach Delay (s)			59.4		
Approach LOS			E		
<b>Intersection Summary</b>					



Arterial Level of Service  
AM Peak Hour - Existing Conditions

12/22/2014

Arterial Level of Service: EB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	44	1.8	9.4	0.1	25
Cooke St	24	16.9	23.8	0.1	10
Ward Ave	25	34.2	58.3	0.2	14
Kamakee St	26	10.8	36.2	0.3	26
Pensacola St	27	21.1	34.3	0.1	15
Piikoi St	28	15.7	25.9	0.1	16
Kona Iki St	29	8.2	22.2	0.1	23
Ala Moana S.C.	30	11.6	22.7	0.1	20
Mahukona St	31	18.8	36.9	0.2	19
Atkinson Dr	32	27.8	44.9	0.2	15
Kalakaua Ave	33	35.0	44.6	0.1	8
McCully St	34	22.2	43.4	0.2	19
Marco Polo Dwy	35	46.7	71.8	0.3	16
	8	5.4	7.3	0.0	9
University Ave	36	43.5	51.3	0.1	6
	7	4.7	13.3	0.1	22
Kamoku St	37	25.5	30.2	0.1	8
Total		350.0	576.6	2.4	15

Arterial Level of Service: WB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	7	13.1	20.3	0.1	12
University Ave	36	45.5	52.2	0.1	6
	8	11.8	21.8	0.1	15
Isenberg St	35	5.1	6.8	0.0	9
McCully St	34	19.7	49.5	0.3	23
Kalakaua Ave	33	49.3	69.7	0.2	12
Atkinson Dr	32	15.3	25.0	0.1	13
Kaheka St	31	14.5	33.0	0.2	21
Keeaumoku St	30	17.3	35.4	0.2	20
Kona Iki St	29	10.2	22.9	0.1	20
	28	14.6	27.6	0.1	19
Pensacola St	27	18.8	31.0	0.1	13
Kamakee St	26	12.9	25.9	0.1	20
Ward Ave	25	21.3	46.0	0.3	20
Cooke St	24	9.8	34.2	0.2	24
	44	1.3	9.2	0.1	25
South St	23	14.0	22.9	0.1	10
Total		294.4	533.4	2.4	16

Arterial Level of Service  
PM Peak Hour Existing Conditions

12/22/2014

Arterial Level of Service: EB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cooke St	24	26.8	41.8	0.1	11
Ward Ave	25	30.4	55.7	0.2	15
	44	3.9	17.6	0.1	26
Kamakee St	26	10.4	23.4	0.1	21
Pensacola St	27	19.7	34.0	0.1	15
Piikoi St	28	20.4	32.1	0.1	13
Kona Iki St	29	13.3	27.8	0.1	19
Ala Moana S.C.	30	25.4	37.9	0.1	12
Mahukona St	31	24.0	43.5	0.2	16
Atkinson Dr	32	18.4	37.0	0.2	19
Kalakaua Ave	33	22.3	32.7	0.1	10
McCully St	34	28.8	52.4	0.2	16
	52	3.9	12.4	0.1	23
Marco Polo Dwy	35	13.6	37.6	0.2	23
University Ave	36	36.1	46.7	0.1	8
	7	9.7	19.0	0.1	15
Kamoku St	37	45.7	52.1	0.1	5
Total		352.9	603.5	2.4	14













Arterial Level of Service: WB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	7	3.6	11.1	0.1	22
University Ave	36	25.6	33.0	0.1	9
Isenberg St	35	11.7	23.1	0.1	17
	52	6.7	31.0	0.2	28
McCully St	34	43.5	51.0	0.1	6
Kalakaua Ave	33	28.2	51.3	0.2	16
Atkinson Dr	32	14.8	24.8	0.1	14
Kaheka St	31	29.5	48.2	0.2	14
Keeaumoku St	30	25.9	44.8	0.2	15
Kona Iki St	29	14.5	27.9	0.1	16
	28	21.3	34.6	0.1	15
Pensacola St	27	19.4	32.0	0.1	13
Kamakee St	26	16.6	30.6	0.1	17
	44	3.4	17.3	0.1	28
Ward Ave	25	31.5	43.5	0.1	10
Cooke St	24	14.4	39.5	0.2	21
South St	23	19.9	37.2	0.1	12
Total		330.3	580.9	2.4	15

# HCM Signalized Intersection Capacity Analysis

## 23: South St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑				↑↑↑		↑↑↑				
Volume (vph)	0	668	0	0	0	776	0	580	34	0	0	0
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				
Lane Util. Factor		0.91				0.76		0.81				
Frb, ped/bikes		1.00				1.00		1.00				
Flpb, ped/bikes		1.00				1.00		1.00				
Frt		1.00				0.85		0.99				
Flt Protected		1.00				1.00		1.00				
Satd. Flow (prot)		5085				3610		7458				
Flt Permitted		1.00				1.00		1.00				
Satd. Flow (perm)		5085				3610		7458				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	742	0	0	0	862	0	644	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	742	0	0	0	862	0	682	0	0	0	0
Confl. Peds. (#/hr)									77			
Turn Type		NA				Prot		NA				
Protected Phases		6				6		4				
Permitted Phases												
Actuated Green, G (s)		32.3				32.3		18.2				
Effective Green, g (s)		32.3				32.3		18.2				
Actuated g/C Ratio		0.53				0.53		0.30				
Clearance Time (s)		5.0				5.0		5.0				
Vehicle Extension (s)		3.0				3.0		3.0				
Lane Grp Cap (vph)		2714				1927		2243				
v/s Ratio Prot		0.15				c0.24		c0.09				
v/s Ratio Perm												
v/c Ratio		0.27				0.45		0.30				
Uniform Delay, d1		7.7				8.6		16.3				
Progression Factor		1.00				1.00		1.00				
Incremental Delay, d2		0.1				0.2		0.1				
Delay (s)		7.8				8.8		16.4				
Level of Service		A				A		B				
Approach Delay (s)		7.8			8.8			16.4			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.7				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.5				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			51.6%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 23: South St & Kapiolani Blvd

12/15/2014















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑				↑↑↑		↑↑↑↑				
Volume (vph)	0	1037	0	0	0	823	0	1492	83	0	0	0
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				
Lane Util. Factor		0.91				0.76		0.81				
Frt		1.00				0.85		0.99				
Flt Protected		1.00				1.00		1.00				
Satd. Flow (prot)		5085				3610		7483				
Flt Permitted		1.00				1.00		1.00				
Satd. Flow (perm)		5085				3610		7483				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94	0.92
Adj. Flow (vph)	0	1103	0	0	0	876	0	1587	90	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1103	0	0	0	876	0	1669	0	0	0	0
Turn Type		NA				Prot		NA				
Protected Phases		6				6		4				
Permitted Phases												
Actuated Green, G (s)		47.6				47.6		41.5				
Effective Green, g (s)		47.6				47.6		41.5				
Actuated g/C Ratio		0.48				0.48		0.42				
Clearance Time (s)		5.0				5.0		5.0				
Vehicle Extension (s)		3.0				3.0		3.0				
Lane Grp Cap (vph)		2442				1733		3133				
v/s Ratio Prot		0.22				c0.24		c0.22				
v/s Ratio Perm												
v/c Ratio		0.45				0.51		0.53				
Uniform Delay, d1		17.1				17.7		21.5				
Progression Factor		1.00				1.00		1.00				
Incremental Delay, d2		0.1				0.2		0.2				
Delay (s)		17.2				17.9		21.7				
Level of Service		B				B		C				
Approach Delay (s)		17.2			17.9			21.7			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 24: Cooke St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑		↵	↑	↗	↵	↗	
Volume (vph)	0	594	83	425	704	173	27	166	39	2	26	10
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frb, ped/bikes		0.98		1.00	0.97		1.00	1.00	0.94	1.00	0.98	
Fipb, ped/bikes		1.00		0.99	1.00		0.94	1.00	1.00	0.96	1.00	
Frt		0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Fit Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		4911		1759	3343		1669	1863	1485	1701	1753	
Fit Permitted		1.00		0.22	1.00		0.73	1.00	1.00	0.59	1.00	
Satd. Flow (perm)		4911		411	3343		1287	1863	1485	1056	1753	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	619	86	443	733	180	28	173	41	2	27	10
RTOR Reduction (vph)	0	15	0	0	17	0	0	0	32	0	8	0
Lane Group Flow (vph)	0	690	0	443	896	0	28	173	9	2	29	0
Confl. Peds. (#/hr)			69	69		58	73		64	64		73
Turn Type		NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases				2			4		4		8	
Actuated Green, G (s)		19.0		50.6	50.6		16.2	16.2	16.2	16.2	16.2	
Effective Green, g (s)		19.0		50.6	50.6		16.2	16.2	16.2	16.2	16.2	
Actuated g/C Ratio		0.25		0.66	0.66		0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1214		737	2202		271	392	313	222	369	
v/s Ratio Prot		0.14		c0.21	0.27			c0.09			0.02	
v/s Ratio Perm				c0.19			0.02		0.01	0.00		
v/c Ratio		0.57		0.60	0.41		0.10	0.44	0.03	0.01	0.08	
Uniform Delay, d1		25.3		8.4	6.1		24.4	26.4	24.0	24.0	24.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.6		1.4	0.1		0.2	0.8	0.0	0.0	0.1	
Delay (s)		25.9		9.8	6.2		24.6	27.2	24.1	24.0	24.4	
Level of Service		C		A	A		C	C	C	C	C	
Approach Delay (s)		25.9			7.4			26.3			24.4	
Approach LOS		C			A			C			C	













Intersection Summary		
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.59	B
Actuated Cycle Length (s)	76.8	Sum of lost time (s)
Intersection Capacity Utilization	77.0%	15.0
Analysis Period (min)	15	ICU Level of Service
		D

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 24: Cooke St & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑		↵	↑	↗	↵	↑	
Volume (vph)	9	1032	52	335	732	110	77	336	180	11	38	25
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>		0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5047		1770	3470		1770	1863	1583	1770	1752	
Flt Permitted		0.93		0.13	1.00		0.72	1.00	1.00	0.30	1.00	
Satd. Flow (perm)		4702		238	3470		1334	1863	1583	555	1752	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	9	1042	53	338	739	111	78	339	182	11	38	25
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	68	0	19	0
Lane Group Flow (vph)	0	1099	0	338	841	0	78	339	114	11	44	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		31.2		58.0	58.0		23.2	23.2	23.2	23.2	23.2	
Effective Green, g (s)		31.2		58.0	58.0		23.2	23.2	23.2	23.2	23.2	
Actuated g/C Ratio		0.34		0.64	0.64		0.25	0.25	0.25	0.25	0.25	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1608		517	2206		339	473	402	141	445	
v/s Ratio Prot				c0.16	0.24			c0.18				0.03
v/s Ratio Perm		0.23		c0.26			0.06		0.07	0.02		
v/c Ratio		0.68		0.65	0.38		0.23	0.72	0.28	0.08	0.10	
Uniform Delay, d1		25.8		17.0	8.0		26.9	31.0	27.3	25.9	26.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.2		3.0	0.1		0.3	5.1	0.4	0.2	0.1	
Delay (s)		27.0		19.9	8.1		27.3	36.1	27.7	26.1	26.1	
Level of Service		C		B	A		C	D	C	C	C	
Approach Delay (s)		27.0			11.5			32.4			26.1	
Approach LOS		C			B			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			91.2			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			75.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑		↖	↑↑	↗	↖	↑↑	
Volume (vph)	0	500	82	311	1148	135	83	356	60	102	733	111
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.93	1.00	0.99	
Fipb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		4945		1770	3458		1770	3539	1467	1770	3446	
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		4945		1770	3458		1770	3539	1467	1770	3446	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	521	85	324	1196	141	86	371	62	106	764	116
RTOR Reduction (vph)	0	20	0	0	8	0	0	0	44	0	10	0
Lane Group Flow (vph)	0	586	0	324	1329	0	86	371	18	106	870	0
Confl. Peds. (#/hr)			36	36		56	39		66	66		39
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		21.9		23.1	50.0		7.9	30.3	30.3	9.0	31.4	
Effective Green, g (s)		21.9		23.1	50.0		7.9	30.3	30.3	9.0	31.4	
Actuated g/C Ratio		0.21		0.22	0.48		0.08	0.29	0.29	0.09	0.30	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1038		392	1657		134	1028	426	152	1037	
v/s Ratio Prot		0.12		0.18	c0.38		0.05	0.10		c0.06	c0.25	
v/s Ratio Perm									0.01			
v/c Ratio		0.56		0.83	0.80		0.64	0.36	0.04	0.70	0.84	
Uniform Delay, d1		36.9		38.7	23.0		46.8	29.3	26.6	46.3	34.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.7		13.3	2.9		10.1	0.2	0.0	13.0	6.1	
Delay (s)		37.6		52.0	25.9		56.9	29.5	26.6	59.4	40.2	
Level of Service		D		D	C		E	C	C	E	D	
Approach Delay (s)		37.6			31.0			33.7			42.2	
Approach LOS		D			C			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.4				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			104.3				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			86.7%				ICU Level of Service			E		
Analysis Period (min)			15									













c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↖	↑↑	↗	↖	↑↑	↗
Volume (vph)	0	1189	143	0	1042	144	156	628	251	249	728	136
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	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91			0.91		1.00	0.95	1.00	1.00	0.95	
Frt		0.98			0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5003			4992		1770	3539	1583	1770	3456	
Flt Permitted		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5003			4992		1770	3539	1583	1770	3456	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1252	151	0	1097	152	164	661	264	262	766	143
RTOR Reduction (vph)	0	12	0	0	15	0	0	0	79	0	13	0
Lane Group Flow (vph)	0	1391	0	0	1234	0	164	661	185	262	896	0
Turn Type		NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4	
Effective Green, g (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4	
Actuated g/C Ratio		0.38			0.38		0.14	0.28	0.28	0.20	0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1883			1879		253	981	438	354	1156	
v/s Ratio Prot		c0.28			0.25		0.09	0.19		c0.15	c0.26	
v/s Ratio Perm									0.12			
v/c Ratio		0.74			0.66		0.65	0.67	0.42	0.74	0.77	
Uniform Delay, d1		27.7			26.5		41.6	33.0	30.4	38.6	30.7	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.6			0.8		5.6	1.8	0.7	8.1	3.3	
Delay (s)		29.2			27.4		47.2	34.9	31.1	46.7	34.0	
Level of Service		C			C		D	C	C	D	C	
Approach Delay (s)		29.2			27.4			35.8			36.9	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 26: Kamakee St & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↘	↗
Volume (vph)	614	64	230	1558	56	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	1.00	1.00
Frbp, ped/bikes	0.99			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			0.99	0.95	1.00
Satd. Flow (prot)	4983			5040	1770	1541
Flt Permitted	1.00			0.74	0.95	1.00
Satd. Flow (perm)	4983			3737	1770	1541
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	627	65	235	1590	57	67
RTOR Reduction (vph)	13	0	0	0	0	48
Lane Group Flow (vph)	679	0	0	1825	57	19
Confl. Peds. (#/hr)		40	40		227	14
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	60.4			60.4	27.5	27.5
Effective Green, g (s)	60.4			60.4	27.5	27.5
Actuated g/C Ratio	0.62			0.62	0.28	0.28
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3074			2305	497	432
v/s Ratio Prot	0.14				c0.03	
v/s Ratio Perm				c0.49		0.01
v/c Ratio	0.22			0.79	0.11	0.04
Uniform Delay, d1	8.3			14.0	26.2	25.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.0			1.9	0.1	0.0
Delay (s)	8.4			16.0	26.3	25.7
Level of Service	A			B	C	C
Approach Delay (s)	8.4			16.0	25.9	
Approach LOS	A			B	C	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 26: Kamakee St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↘	↗
Volume (vph)	1424	133	0	998	122	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5020			5085	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5020			5085	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1499	140	0	1051	128	296
RTOR Reduction (vph)	10	0	0	0	0	16
Lane Group Flow (vph)	1629	0	0	1051	128	280
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	37.5			37.5	27.8	27.8
Effective Green, g (s)	37.5			37.5	27.8	27.8
Actuated g/C Ratio	0.50			0.50	0.37	0.37
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2500			2532	653	584
v/s Ratio Prot	c0.32			0.21	0.07	
v/s Ratio Perm						c0.18
v/c Ratio	0.65			0.42	0.20	0.48
Uniform Delay, d1	14.0			12.0	16.2	18.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.6			0.1	0.1	0.6
Delay (s)	14.7			12.1	16.3	18.8
Level of Service	B			B	B	B
Approach Delay (s)	14.7			12.1	18.1	
Approach LOS	B			B	B	

### Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 27: Pensacola St & Kapiolani Blvd

12/15/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑					↘	↑↑	↗
Volume (vph)	0	556	122	118	1461	0	0	0	0	209	687	347
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	5.0	5.0
Lane Util. Factor		0.91			0.91					1.00	0.95	1.00
Frb, ped/bikes		0.99			1.00					1.00	1.00	0.94
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.97			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		4888			5059					1770	3539	1488
Flt Permitted		1.00			0.78					0.95	1.00	1.00
Satd. Flow (perm)		4888			3948					1770	3539	1488
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)	0	604	133	128	1588	0	0	0	0	227	747	377
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	718	0	0	1716	0	0	0	0	227	747	361
Confl. Peds. (#/hr)			43	43								46
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		2			6						4	
Permitted Phases				6						4		4
Actuated Green, G (s)		56.1			56.1					34.2	34.2	34.2
Effective Green, g (s)		56.1			56.1					34.2	34.2	34.2
Actuated g/C Ratio		0.56			0.56					0.34	0.34	0.34
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2733			2208					603	1206	507
v/s Ratio Prot		0.15									0.21	
v/s Ratio Perm					c0.43					0.13		c0.24
v/c Ratio		0.26			0.78					0.38	0.62	0.71
Uniform Delay, d1		11.4			17.2					25.0	27.6	28.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.1			1.8					0.4	1.0	4.7
Delay (s)		11.5			19.0					25.4	28.6	33.5
Level of Service		B			B					C	C	C
Approach Delay (s)		11.5			19.0			0.0			29.4	
Approach LOS		B			B			A			C	

### Intersection Summary













HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 27: Pensacola St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑					↘	↑↑	↗
Volume (vph)	0	1525	192	0	850	0	0	0	0	305	765	172
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	5.0	5.0
Lane Util. Factor		0.91			0.91					1.00	0.95	1.00
Frt		0.98			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		5000			5085					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		5000			5085					1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1589	200	0	885	0	0	0	0	318	797	179
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	81
Lane Group Flow (vph)	0	1775	0	0	885	0	0	0	0	318	797	98
Turn Type		NA			NA					Perm	NA	Perm
Protected Phases		2			6						4	
Permitted Phases										4		4
Actuated Green, G (s)		47.9			47.9					32.2	32.2	32.2
Effective Green, g (s)		47.9			47.9					32.2	32.2	32.2
Actuated g/C Ratio		0.53			0.53					0.36	0.36	0.36
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2658			2703					632	1264	565
v/s Ratio Prot		c0.36			0.17						c0.23	
v/s Ratio Perm										0.18		0.06
v/c Ratio		0.67			0.33					0.50	0.63	0.17
Uniform Delay, d1		15.3			12.0					22.7	24.0	19.8
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.6			0.1					0.6	1.0	0.1
Delay (s)		16.0			12.0					23.3	25.0	20.0
Level of Service		B			B					C	C	B
Approach Delay (s)		16.0			12.0			0.0			23.9	
Approach LOS		B			B			A			C	













### Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 28: Piikoi St & Kapiolani Blvd

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↖	↑↑↑	↗			
Volume (vph)	0	762	59	37	1570	204	61	735	51	0	0	0
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	5.0	5.0			
Lane Util. Factor		0.91			0.91		1.00	0.91	1.00			
Frb, ped/bikes		1.00			1.00		1.00	1.00	0.90			
Fipb, ped/bikes		1.00			1.00		0.94	1.00	1.00			
Frt		0.99			0.98		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		5019			4971		1658	5085	1426			
Flt Permitted		1.00			0.89		0.95	1.00	1.00			
Satd. Flow (perm)		5019			4452		1658	5085	1426			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	837	65	41	1725	224	67	808	56	0	0	0
RTOR Reduction (vph)	0	8	0	0	2	0	0	0	42	0	0	0
Lane Group Flow (vph)	0	894	0	0	1988	0	67	808	14	0	0	0
Confl. Peds. (#/hr)			25	25		31	64		91			
Turn Type		NA		Perm	NA		Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases				6			8		8			
Actuated Green, G (s)		58.5			58.5		23.1	23.1	23.1			
Effective Green, g (s)		58.5			58.5		23.1	23.1	23.1			
Actuated g/C Ratio		0.64			0.64		0.25	0.25	0.25			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		3205			2843		418	1282	359			
v/s Ratio Prot		0.18						c0.16				
v/s Ratio Perm					c0.45		0.04		0.01			
v/c Ratio		0.28			0.70		0.16	0.63	0.04			
Uniform Delay, d1		7.3			10.8		26.7	30.5	25.9			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.0			0.8		0.2	1.0	0.0			
Delay (s)		7.3			11.6		26.9	31.5	25.9			
Level of Service		A			B		C	C	C			
Approach Delay (s)		7.3			11.6			30.8			0.0	
Approach LOS		A			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.3				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			91.6				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			93.2%				ICU Level of Service		F			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 28: Piikoi St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↖	↑↑↑	↗			
Volume (vph)	0	1678	126	0	696	257	174	1173	204	0	0	0
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	5.0	5.0			
Lane Util. Factor		0.91			0.91		1.00	0.91	1.00			
Fr <sub>t</sub>		0.99			0.96		1.00	1.00	0.85			
Fl <sub>t</sub> Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		5032			4880		1770	5085	1583			
Fl <sub>t</sub> Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		5032			4880		1770	5085	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1785	134	0	740	273	185	1248	217	0	0	0
RTOR Reduction (vph)	0	7	0	0	5	0	0	0	11	0	0	0
Lane Group Flow (vph)	0	1912	0	0	1008	0	185	1248	206	0	0	0
Turn Type		NA			NA		Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)		55.6			55.6		38.6	38.6	38.6			
Effective Green, g (s)		55.6			55.6		38.6	38.6	38.6			
Actuated g/C Ratio		0.53			0.53		0.37	0.37	0.37			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2685			2603		655	1883	586			
v/s Ratio Prot		c0.38			0.21			c0.25				
v/s Ratio Perm							0.10		0.13			
v/c Ratio		0.71			0.39		0.28	0.66	0.35			
Uniform Delay, d <sub>1</sub>		18.3			14.3		23.1	27.4	23.7			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d <sub>2</sub>		0.9			0.1		0.2	0.9	0.4			
Delay (s)		19.2			14.4		23.3	28.3	24.1			
Level of Service		B			B		C	C	C			
Approach Delay (s)		19.2			14.4			27.2			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.0				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			104.2				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			66.2%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 29: Kona Iki St & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↑	
Volume (vph)	648	99	42	1725	17	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frb, ped/bikes	0.98			1.00	0.98	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.98			1.00	0.91	
Flt Protected	1.00			1.00	0.99	
Satd. Flow (prot)	4877			5073	1624	
Flt Permitted	1.00			0.90	0.99	
Satd. Flow (perm)	4877			4564	1624	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	697	106	45	1855	18	42
RTOR Reduction (vph)	12	0	0	0	38	0
Lane Group Flow (vph)	791	0	0	1900	22	0
Confl. Peds. (#/hr)		87	87			25
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.9			56.9	7.5	
Effective Green, g (s)	56.9			56.9	7.5	
Actuated g/C Ratio	0.76			0.76	0.10	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3729			3490	163	
v/s Ratio Prot	0.16				c0.01	
v/s Ratio Perm				c0.42		
v/c Ratio	0.21			0.54	0.14	
Uniform Delay, d1	2.5			3.5	30.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.2	0.4	
Delay (s)	2.5			3.7	30.9	
Level of Service	A			A	C	
Approach Delay (s)	2.5			3.7	30.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay		3.9	HCM 2000 Level of Service A
HCM 2000 Volume to Capacity ratio		0.50	
Actuated Cycle Length (s)		74.4	Sum of lost time (s) 10.0
Intersection Capacity Utilization		79.7%	ICU Level of Service D
Analysis Period (min)		15	

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 29: Kona Iki St & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↘	
Volume (vph)	1648	161	0	772	161	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.91			0.91	1.00	
Frt	0.99			1.00	0.95	
FIt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	5017			5085	1711	
FIt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	5017			5085	1711	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1665	163	0	780	163	107
RTOR Reduction (vph)	11	0	0	0	16	0
Lane Group Flow (vph)	1817	0	0	780	254	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	8	
Permitted Phases						
Actuated Green, G (s)	44.9			44.9	27.5	
Effective Green, g (s)	44.9			44.9	27.5	
Actuated g/C Ratio	0.54			0.54	0.33	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2733			2770	571	
v/s Ratio Prot	c0.36			0.15	c0.15	
v/s Ratio Perm						
v/c Ratio	0.66			0.28	0.44	
Uniform Delay, d1	13.4			10.1	21.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.1	0.6	
Delay (s)	14.0			10.1	22.0	
Level of Service	B			B	C	
Approach Delay (s)	14.0			10.1	22.0	
Approach LOS	B			B	C	













### Intersection Summary

HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 30: Kapiolani Blvd & Keeaumoku St

12/15/2014













														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑			↑↑↑			↑↑↑	↑		↑↑↑			
Volume (vph)	0	478	84	0	1670	107	0	128	9	110	335	56		
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	5.0		5.0			
Lane Util. Factor		0.91			0.91			*0.50	1.00		0.91			
Frb, ped/bikes		0.96			0.99			1.00	0.76		0.97			
Flpb, ped/bikes		1.00			1.00			1.00	1.00		0.96			
Frt		0.98			0.99			1.00	0.85		0.98			
Flt Protected		1.00			1.00			1.00	1.00		0.99			
Satd. Flow (prot)		4789			4989			2794	1204		4589			
Flt Permitted		1.00			1.00			1.00	1.00		0.80			
Satd. Flow (perm)		4789			4989			2794	1204		3727			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Adj. Flow (vph)	0	493	87	0	1722	110	0	132	9	113	345	58		
RTOR Reduction (vph)	0	10	0	0	7	0	0	0	6	0	6	0		
Lane Group Flow (vph)	0	570	0	0	1825	0	0	132	3	0	510	0		
Confl. Peds. (#/hr)			240			155			220	261		297		
Turn Type		NA			NA			NA	Perm	pm+pt		NA		
Protected Phases		2			6			8		7		4		
Permitted Phases									8	4				
Actuated Green, G (s)		51.0			51.0			28.3	28.3		37.4			
Effective Green, g (s)		51.0			51.0			28.3	28.3		37.4			
Actuated g/C Ratio		0.52			0.52			0.29	0.29		0.38			
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0			
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0			
Lane Grp Cap (vph)		2482			2585			803	346		1452			
v/s Ratio Prot		0.12			c0.37			0.05			c0.01			
v/s Ratio Perm									0.00		c0.12			
v/c Ratio		0.23			0.71			0.16	0.01		0.35			
Uniform Delay, d1		13.0			18.0			26.2	25.0		21.8			
Progression Factor		1.00			1.00			1.00	1.00		1.00			
Incremental Delay, d2		0.0			0.9			0.1	0.0		0.1			
Delay (s)		13.0			18.9			26.3	25.0		22.0			
Level of Service		B			B			C	C		C			
Approach Delay (s)		13.0			18.9			26.2			22.0			
Approach LOS		B			B			C			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			18.6									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.59											
Actuated Cycle Length (s)			98.4								15.0		Sum of lost time (s)	
Intersection Capacity Utilization			95.9%										ICU Level of Service	F
Analysis Period (min)			15											

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 30: Kapiolani Blvd & Keeaumoku St

12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑			↑↑↑			↑↑↑	↑		↑↑↑		
Volume (vph)	78	1513	119	0	721	108	0	556	31	228	624	59	
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	5.0		5.0		
Lane Util. Factor		0.91			0.91			0.91	1.00		0.91		
Fr <sub>t</sub>		0.99			0.98			1.00	0.85		0.99		
Fl <sub>t</sub> Protected		1.00			1.00			1.00	1.00		0.99		
Satd. Flow (prot)		5021			4986			5085	1583		4974		
Fl <sub>t</sub> Permitted		0.82			1.00			1.00	1.00		0.69		
Satd. Flow (perm)		4136			4986			5085	1583		3489		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	81	1576	124	0	751	112	0	579	32	238	650	61	
RTOR Reduction (vph)	0	7	0	0	18	0	0	0	23	0	6	0	
Lane Group Flow (vph)	0	1774	0	0	845	0	0	579	9	0	943	0	
Turn Type	Perm	NA			NA			NA	Perm	pm+pt	NA		
Protected Phases		2			6			8		7	4		
Permitted Phases	2								8	4			
Actuated Green, G (s)		57.1			57.1			28.4	28.4		39.3		
Effective Green, g (s)		57.1			57.1			28.4	28.4		39.3		
Actuated g/C Ratio		0.54			0.54			0.27	0.27		0.37		
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0		
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		2219			2675			1357	422		1371		
v/s Ratio Prot					0.17			0.11			c0.04		
v/s Ratio Perm		c0.43							0.01		c0.22		
v/c Ratio		0.80			0.32			0.43	0.02		0.69		
Uniform Delay, d1		20.0			13.8			32.3	28.7		28.4		
Progression Factor		1.00			1.00			1.00	1.00		1.00		
Incremental Delay, d2		2.1			0.1			0.2	0.0		1.5		
Delay (s)		22.1			13.8			32.5	28.8		29.8		
Level of Service		C			B			C	C		C		
Approach Delay (s)		22.1			13.8			32.3			29.8		
Approach LOS		C			B			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			23.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			106.4									Sum of lost time (s)	15.0
Intersection Capacity Utilization			95.2%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 31: Mahukona St/Kaheka St & Kapiolani Blvd

12/15/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↓			↑↑↓			↑↓			↑↑	↗
Volume (vph)	0	527	73	6	1681	131	13	153	42	73	152	83
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			5.0	5.0
Lane Util. Factor		0.91			0.91			0.95			0.95	1.00
Frb, ped/bikes		0.98			0.99			0.96			1.00	0.90
Flpb, ped/bikes		1.00			1.00			1.00			0.96	1.00
Frt		0.98			0.99			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.98	1.00
Satd. Flow (prot)		4916			4977			3271			3326	1423
Flt Permitted		1.00			0.94			0.93			0.78	1.00
Satd. Flow (perm)		4916			4670			3053			2645	1423
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	561	78	6	1788	139	14	163	45	78	162	88
RTOR Reduction (vph)	0	18	0	0	8	0	0	18	0	0	0	12
Lane Group Flow (vph)	0	621	0	0	1925	0	0	204	0	0	240	76
Confl. Peds. (#/hr)			101	101		131	92		197	197		92
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)		55.1			55.1			30.5			30.5	30.5
Effective Green, g (s)		55.1			55.1			30.5			30.5	30.5
Actuated g/C Ratio		0.58			0.58			0.32			0.32	0.32
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2833			2691			974			843	453
v/s Ratio Prot		0.13										
v/s Ratio Perm					c0.41			0.07			c0.09	0.05
v/c Ratio		0.22			0.72			0.21			0.28	0.17
Uniform Delay, d1		9.8			14.6			23.8			24.4	23.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.0			0.9			0.1			0.2	0.2
Delay (s)		9.9			15.5			23.9			24.6	23.6
Level of Service		A			B			C			C	C
Approach Delay (s)		9.9			15.5			23.9			24.3	
Approach LOS		A			B			C			C	













Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 31: Mahukona St/Kaheka St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔			↔↔↔			↔↔			↔↔	↔
Volume (vph)	33	1615	81	0	782	263	19	311	77	120	390	74
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			5.0	5.0
Lane Util. Factor		0.91			0.91			0.95			0.95	1.00
Fr <sub>t</sub>		0.99			0.96			0.97			1.00	0.85
Fl <sub>t</sub> Protected		1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)		5045			4893			3431			3498	1583
Fl <sub>t</sub> Permitted		0.89			1.00			0.92			0.70	1.00
Satd. Flow (perm)		4480			4893			3150			2461	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	1718	86	0	832	280	20	331	82	128	415	79
RTOR Reduction (vph)	0	4	0	0	53	0	0	12	0	0	0	52
Lane Group Flow (vph)	0	1835	0	0	1059	0	0	421	0	0	543	27
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		4
Actuated Green, G (s)		53.1			53.1			33.3			33.3	33.3
Effective Green, g (s)		53.1			53.1			33.3			33.3	33.3
Actuated g/C Ratio		0.55			0.55			0.35			0.35	0.35
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2467			2695			1088			850	546
v/s Ratio Prot					0.22							
v/s Ratio Perm		c0.41						0.13			c0.22	0.02
v/c Ratio		0.74			0.39			0.39			0.64	0.05
Uniform Delay, d <sub>1</sub>		16.5			12.4			23.8			26.5	21.0
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d <sub>2</sub>		1.2			0.1			0.2			1.6	0.0
Delay (s)		17.7			12.5			24.1			28.1	21.1
Level of Service		B			B			C			C	C
Approach Delay (s)		17.7			12.5			24.1			27.2	
Approach LOS		B			B			C			C	

### Intersection Summary

HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 32: Atkinson Dr & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑↑↑↑
Volume (vph)	553	70	928	1807	0	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0		5.0
Lane Util. Factor	0.91			0.91		0.64
Frb, ped/bikes	0.99			1.00		1.00
Flpb, ped/bikes	1.00			0.99		1.00
Frt	0.98			1.00		0.85
Flt Protected	1.00			0.98		1.00
Satd. Flow (prot)	4957			4974		4053
Flt Permitted	1.00			0.67		1.00
Satd. Flow (perm)	4957			3381		4053
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	582	74	977	1902	0	259
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	647	0	0	2879	0	259
Confl. Peds. (#/hr)		72	72			
Turn Type	NA		pm+pt	NA		pt+ov
Protected Phases	2		1 8	6		1 8
Permitted Phases			6			
Actuated Green, G (s)	70.0			104.9		29.9
Effective Green, g (s)	70.0			104.9		29.9
Actuated g/C Ratio	0.64			0.95		0.27
Clearance Time (s)	5.0			5.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3157			3660		1102
v/s Ratio Prot	0.13			c0.21		0.06
v/s Ratio Perm				c0.54		
v/c Ratio	0.20			1.05dl		0.24
Uniform Delay, d1	8.3			0.5		31.1
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.0			1.2		0.1
Delay (s)	8.4			1.6		31.2
Level of Service	A			A		C
Approach Delay (s)	8.4			1.6	31.2	
Approach LOS	A			A	C	

### Intersection Summary

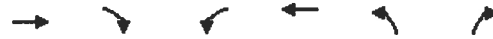
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

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

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 32: Atkinson Dr & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑↑↑↑
Volume (vph)	1537	228	0	1088	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0		5.0
Lane Util. Factor	0.91			0.91		0.64
Frt	0.98			1.00		0.85
Flt Protected	1.00			1.00		1.00
Satd. Flow (prot)	4987			5085		4053
Flt Permitted	1.00			1.00		1.00
Satd. Flow (perm)	4987			5085		4053
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1568	233	0	1110	0	796
RTOR Reduction (vph)	16	0	0	0	0	0
Lane Group Flow (vph)	1785	0	0	1110	0	796
Turn Type	NA			NA		Prot
Protected Phases	2			6		8
Permitted Phases						
Actuated Green, G (s)	45.8			45.8		29.4
Effective Green, g (s)	45.8			45.8		29.4
Actuated g/C Ratio	0.54			0.54		0.35
Clearance Time (s)	5.0			5.0		5.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	2680			2733		1398
v/s Ratio Prot	c0.36			0.22		c0.20
v/s Ratio Perm						
v/c Ratio	0.67			0.41		0.57
Uniform Delay, d1	14.2			11.7		22.7
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.6			0.1		0.5
Delay (s)	14.8			11.8		23.3
Level of Service	B			B		C
Approach Delay (s)	14.8			11.8	23.3	
Approach LOS	B			B	C	













Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 33: Kalakaua Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑		↖	↑↑			↑↑↑	
Volume (vph)	0	354	450	0	2202	197	509	702	68	0	592	60
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		5.0	5.0			5.0	
Lane Util. Factor		0.86	0.86		0.91		0.97	0.95			0.91	
Frbp, ped/bikes		1.00	1.00		0.98		1.00	0.99			0.98	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		0.94	0.85		0.99		1.00	0.99			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4525	1362		4922		3433	3459			4916	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (perm)		4525	1362		4922		3433	3459			4916	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	369	469	0	2294	205	530	731	71	0	617	62
RTOR Reduction (vph)	0	83	5	0	7	0	0	5	0	0	3	0
Lane Group Flow (vph)	0	521	229	0	2492	0	530	797	0	0	676	0
Confl. Peds. (#/hr)						153			76			150
Turn Type		NA	pt+ov		NA		Prot	NA			NA	
Protected Phases		2	2 3		6		3	8			4	
Permitted Phases												
Actuated Green, G (s)		72.0	100.0		72.0		23.0	58.0			30.0	
Effective Green, g (s)		72.0	100.0		72.0		23.0	58.0			30.0	
Actuated g/C Ratio		0.51	0.71		0.51		0.16	0.41			0.21	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2327	972		2531		563	1433			1053	
v/s Ratio Prot		0.12	0.17		c0.51		c0.15	0.23			c0.14	
v/s Ratio Perm												
v/c Ratio		0.22	0.24		0.98		0.94	0.56			0.64	
Uniform Delay, d1		18.7	6.9		33.5		57.8	31.2			50.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.0	0.1		14.3		24.2	0.5			1.3	
Delay (s)		18.7	7.0		47.8		82.0	31.7			51.5	
Level of Service		B	A		D		F	C			D	
Approach Delay (s)		15.4			47.8			51.7			51.5	
Approach LOS		B			D			D			D	













Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis













## 33: Kalakaua Ave & Kapiolani Blvd

12/15/2014

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↗		↑↑↑			↑↑			↑↑↑			
Volume (vph)	0	1562	752	0	978	152	0	884	51	0	720	110		
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			5.0			5.0			
Lane Util. Factor		0.86	0.86		0.91			0.95			0.91			
Frt		0.98	0.85		0.98			0.99			0.98			
Flt Protected		1.00	1.00		1.00			1.00			1.00			
Satd. Flow (prot)		4712	1362		4983			3510			4984			
Flt Permitted		1.00	1.00		1.00			1.00			1.00			
Satd. Flow (perm)		4712	1362		4983			3510			4984			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98		
Adj. Flow (vph)	0	1594	767	0	998	155	0	902	52	0	735	112		
RTOR Reduction (vph)	0	13	36	0	14	0	0	3	0	0	15	0		
Lane Group Flow (vph)	0	1819	493	0	1139	0	0	951	0	0	832	0		
Turn Type		NA	Prot		NA			NA			NA			
Protected Phases		2	2		6			8			4			
Permitted Phases														
Actuated Green, G (s)		67.4	67.4		67.4			42.4			42.4			
Effective Green, g (s)		67.4	67.4		67.4			42.4			42.4			
Actuated g/C Ratio		0.56	0.56		0.56			0.35			0.35			
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		2650	766		2803			1242			1763			
v/s Ratio Prot		c0.39	0.36		0.23			c0.27			0.17			
v/s Ratio Perm														
v/c Ratio		0.69	0.64		0.41			0.77			0.47			
Uniform Delay, d1		18.7	18.0		14.9			34.3			30.0			
Progression Factor		1.00	1.00		1.00			1.00			1.00			
Incremental Delay, d2		0.8	1.9		0.1			2.9			0.2			
Delay (s)		19.4	19.8		15.0			37.2			30.2			
Level of Service		B	B		B			D			C			
Approach Delay (s)		19.5			15.0			37.2			30.2			
Approach LOS		B			B			D			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			23.4									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.72											
Actuated Cycle Length (s)			119.8								10.0			
Intersection Capacity Utilization			70.2%										ICU Level of Service	C
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis  
 34: McCully St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑↑		↵	↑↑	↵	↵	↑↑	
Volume (vph)	0	415	23	263	2249	16	139	455	222	38	534	72
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	1.00	0.87	1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr t		0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.98	
Fl t Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5002		1770	5075		1770	3539	1380	1770	3430	
Fl t Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		5002		1770	5075		1770	3539	1380	1770	3430	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	446	25	283	2418	17	149	489	239	41	574	77
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	168	0	8	0
Lane Group Flow (vph)	0	467	0	283	2435	0	149	489	71	41	643	0
Confl. Peds. (#/hr)			105			74			94			81
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)		42.5		26.4	73.9		15.0	40.0	40.0	6.0	31.0	
Effective Green, g (s)		42.5		26.4	73.9		15.0	40.0	40.0	6.0	31.0	
Actuated g/C Ratio		0.32		0.20	0.55		0.11	0.30	0.30	0.04	0.23	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1575		346	2780		196	1049	409	78	788	
v/s Ratio Prot		0.09		0.16	c0.48		c0.08	0.14		0.02	c0.19	
v/s Ratio Perm									0.05			
v/c Ratio		0.30		0.82	0.88		0.76	0.47	0.17	0.53	0.82	
Uniform Delay, d1		34.9		51.9	26.5		58.2	38.7	35.2	63.1	49.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		13.9	3.4		15.8	0.3	0.2	6.3	6.5	
Delay (s)		35.0		65.9	29.9		74.0	39.1	35.4	69.3	55.8	
Level of Service		D		E	C		E	D	D	E	E	
Approach Delay (s)		35.0			33.7			44.0			56.6	
Approach LOS		D			C			D			E	






















Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	134.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 34: McCully St & Kapiolani Blvd

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1373	91	0	814	38	200	588	307	39	588	61
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99			0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5038			5051		1770	3539	1583	1770	3489	
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5038			5051		1770	3539	1583	1770	3489	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	163	1401	93	0	831	39	204	600	313	40	600	62
RTOR Reduction (vph)	0	5	0	0	4	0	0	0	57	0	6	0
Lane Group Flow (vph)	163	1489	0	0	866	0	204	600	256	40	656	0
Turn Type	Prot	NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	15.6	50.2			29.6		18.6	45.1	45.1	4.3	30.8	
Effective Green, g (s)	15.6	50.2			29.6		18.6	45.1	45.1	4.3	30.8	
Actuated g/C Ratio	0.14	0.44			0.26		0.16	0.39	0.39	0.04	0.27	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	240	2206			1304		287	1392	622	66	937	
v/s Ratio Prot	0.09	c0.30			0.17		c0.12	0.17		0.02	c0.19	
v/s Ratio Perm									0.16			
v/c Ratio	0.68	0.67			0.66		0.71	0.43	0.41	0.61	0.70	
Uniform Delay, d1	47.1	25.7			38.1		45.5	25.4	25.1	54.3	37.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	0.8			1.3		8.0	0.2	0.4	14.7	2.4	
Delay (s)	54.5	26.5			39.3		53.5	25.6	25.6	69.0	40.1	
Level of Service	D	C			D		D	C	C	E	D	
Approach Delay (s)		29.3			39.3			30.7			41.8	
Approach LOS		C			D			C			D	

### Intersection Summary

HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	114.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 35: Kapiolani Blvd & Isenberg St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↔	↔		↔	↔
Volume (vph)	0	672	1	0	2494	21	36	42	35	62	0	67
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	5.0		5.0	5.0
Lane Util. Factor		0.91			0.91			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00	0.92		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		0.94	1.00
Frt		1.00			1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00			1.00			0.98	1.00		0.95	1.00
Satd. Flow (prot)		5084			5077			1821	1459		1662	1583
Flt Permitted		1.00			1.00			0.85	1.00		0.70	1.00
Satd. Flow (perm)		5084			5077			1575	1459		1233	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	693	1	0	2571	22	37	43	36	64	0	69
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	30	0	0	13
Lane Group Flow (vph)	0	694	0	0	2592	0	0	80	6	0	64	56
Confl. Peds. (#/hr)						8			62	62		
Turn Type		NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)		86.5			86.5			20.8	20.8		20.8	20.8
Effective Green, g (s)		86.5			86.5			20.8	20.8		20.8	20.8
Actuated g/C Ratio		0.74			0.74			0.18	0.18		0.18	0.18
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3749			3743			279	258		218	280
v/s Ratio Prot		0.14			c0.51							
v/s Ratio Perm								0.05	0.00		c0.05	0.04
v/c Ratio		0.19			0.69			0.29	0.02		0.29	0.20
Uniform Delay, d1		4.7			8.3			41.8	39.9		41.9	41.1
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0			0.6			0.6	0.0		0.8	0.4
Delay (s)		4.7			8.8			42.4	39.9		42.6	41.5
Level of Service		A			A			D	D		D	D
Approach Delay (s)		4.7			8.8			41.6			42.0	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	117.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 35: Kapiolani Blvd & Isenberg St

12/15/2014






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	1613	1	0	835	60	16	20	12	132	51	37
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			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.91			0.91			1.00	1.00		1.00	1.00
Fr <sub>t</sub>	1.00	1.00			0.99			1.00	0.85		1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00			1.00			0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	5085			5034			1822	1583		1798	1583
Fl <sub>t</sub> Permitted	0.28	1.00			1.00			0.86	1.00		0.76	1.00
Satd. Flow (perm)	519	5085			5034			1594	1583		1420	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	1698	1	0	879	63	17	21	13	139	54	39
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	10	0	0	29
Lane Group Flow (vph)	49	1699	0	0	936	0	0	38	3	0	193	10
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2						8		8	4		4
Actuated Green, G (s)	43.7	43.7			43.7			19.3	19.3		19.3	19.3
Effective Green, g (s)	43.7	43.7			43.7			19.3	19.3		19.3	19.3
Actuated g/C Ratio	0.60	0.60			0.60			0.26	0.26		0.26	0.26
Clearance Time (s)	5.0	5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	310	3044			3013			421	418		375	418
v/s Ratio Prot		c0.33			0.19							
v/s Ratio Perm	0.09							0.02	0.00		c0.14	0.01
v/c Ratio	0.16	0.56			0.31			0.09	0.01		0.51	0.02
Uniform Delay, d <sub>1</sub>	6.5	8.8			7.2			20.2	19.8		22.9	19.9
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d <sub>2</sub>	0.2	0.2			0.1			0.1	0.0		1.2	0.0
Delay (s)	6.7	9.1			7.3			20.3	19.8		24.1	19.9
Level of Service	A	A			A			C	B		C	B
Approach Delay (s)		9.0			7.3			20.2			23.4	
Approach LOS		A			A			C			C	

### Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 36: University Ave & Kapiolani Blvd

12/15/2014






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	425	113	119	2297	72	211	327	138	163	232	49
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	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.96		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4869		1770	5052		1770	3273		1770	3539	1583
Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4869		1770	5052		1770	3273		1770	3539	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)	168	462	123	129	2497	78	229	355	150	177	252	53
RTOR Reduction (vph)	0	32	0	0	2	0	0	35	0	0	0	46
Lane Group Flow (vph)	168	553	0	129	2573	0	229	470	0	177	252	7
Confl. Peds. (#/hr)			34			50			88	88		
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												8
Actuated Green, G (s)	11.0	58.9		14.4	62.3		21.8	28.7		11.0	17.9	17.9
Effective Green, g (s)	11.0	58.9		14.4	62.3		21.8	28.7		11.0	17.9	17.9
Actuated g/C Ratio	0.08	0.44		0.11	0.47		0.16	0.22		0.08	0.13	0.13
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	146	2156		191	2366		290	706		146	476	213
v/s Ratio Prot	c0.09	0.11		0.07	c0.51		c0.13	c0.14		c0.10	0.07	
v/s Ratio Perm												0.00
v/c Ratio	1.15	0.26		0.68	1.09		0.79	0.67		1.21	0.53	0.03
Uniform Delay, d1	61.0	23.3		57.1	35.4		53.4	47.8		61.0	53.6	50.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	120.7	0.1		9.1	47.2		13.3	2.4		142.7	1.1	0.1
Delay (s)	181.7	23.4		66.1	82.6		66.7	50.1		203.7	54.7	50.1
Level of Service	F	C		E	F		E	D		F	D	D
Approach Delay (s)		58.7			81.8			55.3			108.9	
Approach LOS		E			F			E			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			76.7				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			133.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			109.6%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 36: University Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	1385	198	118	878	17	64	140	51	88	116	96
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	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00		1.00	0.96		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4990		1770	5071		1770	3398		1770	3539	1583
Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4990		1770	5071		1770	3398		1770	3539	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	178	1413	202	120	896	17	65	143	52	90	118	98
RTOR Reduction (vph)	0	12	0	0	1	0	0	29	0	0	0	80
Lane Group Flow (vph)	178	1603	0	120	912	0	65	166	0	90	118	18
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												8
Actuated Green, G (s)	16.9	46.4		12.8	42.3		7.2	17.9		8.5	19.2	19.2
Effective Green, g (s)	16.9	46.4		12.8	42.3		7.2	17.9		8.5	19.2	19.2
Actuated g/C Ratio	0.16	0.44		0.12	0.40		0.07	0.17		0.08	0.18	0.18
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	283	2192		214	2031		120	575		142	643	287
v/s Ratio Prot	c0.10	c0.32		0.07	0.18		0.04	c0.05		c0.05	0.03	
v/s Ratio Perm												0.01
v/c Ratio	0.63	0.73		0.56	0.45		0.54	0.29		0.63	0.18	0.06
Uniform Delay, d <sub>1</sub>	41.4	24.4		43.7	23.1		47.6	38.3		47.0	36.6	35.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	4.3	1.3		3.3	0.2		4.9	0.3		8.9	0.1	0.1
Delay (s)	45.8	25.7		47.1	23.3		52.5	38.6		56.0	36.7	35.8
Level of Service	D	C		D	C		D	D		E	D	D
Approach Delay (s)		27.7			26.1			42.1			42.1	
Approach LOS		C			C			D			D	

**Intersection Summary**

HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗	↘	↑	↖	↙	↓	↘
Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↘		↑↑↑	↑		↘	↕			↕↑	↘
Volume (vph)	425	164	52	2165	358	22	305	170	11	88	211	124
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	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	0.95	0.88		0.91	1.00		0.95	0.95			0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.94		1.00	1.00			1.00	1.00
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frtr	1.00	0.85		1.00	0.85		1.00	0.99			1.00	0.85
Flt Protected	1.00	1.00		1.00	1.00		0.95	0.99			0.99	1.00
Satd. Flow (prot)	3539	2787		5085	1484		1681	1730			3488	1583
Flt Permitted	1.00	1.00		1.00	1.00		0.95	0.99			0.99	1.00
Satd. Flow (perm)	3539	2787		5085	1484		1681	1730			3488	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	443	171	54	2255	373	23	318	177	11	92	220	129
RTOR Reduction (vph)	0	51	0	0	0	0	0	1	0	0	0	82
Lane Group Flow (vph)	443	174	0	2255	373	0	261	267	0	0	312	64
Confl. Peds. (#/hr)			20		33				20			
Turn Type	NA	Prot		NA	Perm	Split	Split	NA		Split	NA	Prot
Protected Phases	2	2		6		8	8	8		4	4	4
Permitted Phases					6							
Actuated Green, G (s)	71.3	71.3		71.3	71.3		25.9	25.9			20.1	20.1
Effective Green, g (s)	71.3	71.3		71.3	71.3		25.9	25.9			20.1	20.1
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.16	0.16			0.13	0.13
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	1603	1262		2303	672		276	284			445	202
v/s Ratio Prot	0.13	0.06		c0.44			c0.16	0.15			c0.09	0.04
v/s Ratio Perm					0.25							
v/c Ratio	0.28	0.14		0.98	0.56		0.95	0.94			0.70	0.32
Uniform Delay, d1	26.9	25.1		42.3	31.5		65.1	65.0			65.8	62.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		14.0	1.0		39.3	37.7			4.9	0.9
Delay (s)	27.0	25.2		56.3	32.5		104.4	102.7			70.7	63.3
Level of Service	C	C		E	C		F	F			E	E
Approach Delay (s)	26.4			52.9				103.5			68.4	
Approach LOS	C			D				F			E	

### Intersection Summary

HCM 2000 Control Delay	58.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	157.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations			3T		
Volume (vph)	16	136	122	57	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			5.0		
Lane Util. Factor			0.97		
Frbp, ped/bikes			0.98		
Fipb, ped/bikes			1.00		
Frt			0.95		
Flt Protected			0.97		
Satd. Flow (prot)			3249		
Flt Permitted			0.97		
Satd. Flow (perm)			3249		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	142	127	59	75
RTOR Reduction (vph)	0	0	82	0	0
Lane Group Flow (vph)	0	0	321	0	0
Confl. Peds. (#/hr)	20				20
Turn Type		Prot	Prot		
Protected Phases		3	3		
Permitted Phases					
Actuated Green, G (s)			20.1		
Effective Green, g (s)			20.1		
Actuated g/C Ratio			0.13		
Clearance Time (s)			5.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			414		
v/s Ratio Prot			0.10		
v/s Ratio Perm					
v/c Ratio			0.78		
Uniform Delay, d1			66.5		
Progression Factor			1.00		
Incremental Delay, d2			8.8		
Delay (s)			75.3		
Level of Service			E		
Approach Delay (s)			75.3		
Approach LOS			E		
<b>Intersection Summary</b>					

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗	↘	↑	↖	↙	↓	↘
Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↗↘		↑↑↑	↗		↘	↕			↖↑	↘
Volume (vph)	971	512	78	792	295	33	156	273	31	80	279	104
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	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	0.95	0.88		0.91	1.00		0.95	0.95			0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.95		1.00	1.00			1.00	1.00
Ftpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	0.99			1.00	0.85
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	3539	2787		5085	1498		1681	1732			3500	1583
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	3539	2787		5085	1498		1681	1732			3500	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	991	522	80	808	301	34	159	279	32	82	285	106
RTOR Reduction (vph)	0	63	0	0	203	0	0	3	0	0	0	80
Lane Group Flow (vph)	991	539	0	808	98	0	177	324	0	0	367	40
Confl. Peds. (#/hr)			20		34				20			
Turn Type	NA	Prot		NA	Perm	Split	Split	NA		Split	NA	Prot
Protected Phases	2	2		6		8	8	8		4	4	4
Permitted Phases					6							
Actuated Green, G (s)	45.3	45.3		45.3	45.3		28.3	28.3			21.3	21.3
Effective Green, g (s)	45.3	45.3		45.3	45.3		28.3	28.3			21.3	21.3
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.20	0.20			0.15	0.15
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	1157	911		1663	489		343	353			538	243
v/s Ratio Prot	c0.28	0.19		0.16			0.11	c0.19			c0.10	0.03
v/s Ratio Perm					0.07							
v/c Ratio	0.86	0.59		0.49	0.20		0.52	0.92			0.68	0.17
Uniform Delay, d1	43.6	38.9		37.3	33.6		49.0	54.0			55.4	50.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	6.4	1.0		0.2	0.2		1.3	27.7			3.6	0.3
Delay (s)	50.0	39.9		37.5	33.8		50.3	81.7			59.0	51.2
Level of Service	D	D		D	C		D	F			E	D
Approach Delay (s)	46.2			36.5				70.7			57.1	
Approach LOS	D			D				E			E	

Intersection Summary

HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	138.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations			3T		
Volume (vph)	14	51	129	101	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			5.0		
Lane Util. Factor			0.97		
Frbp, ped/bikes			0.96		
Flpb, ped/bikes			1.00		
Frt			0.91		
Flt Protected			0.98		
Satd. Flow (prot)			3107		
Flt Permitted			0.98		
Satd. Flow (perm)			3107		
Peak-hour factor, PHF	0.98	0.92	0.98	0.98	0.98
Adj. Flow (vph)	14	55	132	103	174
RTOR Reduction (vph)	0	0	78	0	0
Lane Group Flow (vph)	0	0	386	0	0
Confl. Peds. (#/hr)	20				20
Turn Type		Prot	Prot		
Protected Phases		3	3		
Permitted Phases					
Actuated Green, G (s)			23.6		
Effective Green, g (s)			23.6		
Actuated g/C Ratio			0.17		
Clearance Time (s)			5.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			529		
v/s Ratio Prot			0.12		
v/s Ratio Perm					
v/c Ratio			0.73		
Uniform Delay, d1			54.4		
Progression Factor			1.00		
Incremental Delay, d2			5.0		
Delay (s)			59.4		
Level of Service			E		
Approach Delay (s)			59.4		
Approach LOS			E		
<b>Intersection Summary</b>					

Arterial Level of Service  
 AM Peak Hour - No Contraflow Lanes

12/22/2014

Arterial Level of Service: EB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	44	1.7	9.2	0.1	26
Cooke St	24	21.0	27.8	0.1	8
Ward Ave	25	28.2	52.9	0.2	16
Kamakee St	26	10.5	35.8	0.3	26
Pensacola St	27	17.7	30.9	0.1	17
Piikoi St	28	13.9	24.6	0.1	16
Kona Iki St	29	8.9	22.4	0.1	23
Ala Moana S.C.	30	10.4	21.0	0.1	22
Mahukona St	31	13.7	31.9	0.2	22
Atkinson Dr	32	10.3	28.0	0.2	25
Kalakaua Ave	33	16.8	26.4	0.1	13
McCully St	34	39.0	59.4	0.2	14
Marco Polo Dwy	35	15.2	44.3	0.3	26
	8	2.7	4.6	0.0	14
University Ave	36	30.3	38.3	0.1	9
	7	2.7	11.7	0.1	25
Kamoku St	37	24.4	29.5	0.1	8
Total		267.4	498.7	2.4	18

Arterial Level of Service: WB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	7	27.5	34.5	0.1	7
University Ave	36	50.0	56.7	0.1	5
	8	15.5	25.3	0.1	13
Isenberg St	35	4.0	5.7	0.0	11
McCully St	34	37.2	65.3	0.3	17
Kalakaua Ave	33	79.6	98.8	0.2	8
Atkinson Dr	32	8.8	18.0	0.1	19
Kaheka St	31	13.5	31.9	0.2	22
Keeaumoku St	30	17.4	35.1	0.2	20
Kona Iki St	29	11.4	23.9	0.1	19
	28	18.7	31.5	0.1	16
Pensacola St	27	16.8	28.4	0.1	14
Kamakee St	26	16.3	29.5	0.1	17
Ward Ave	25	36.3	59.2	0.3	16
Cooke St	24	12.3	37.8	0.2	22
	44	1.4	9.2	0.1	25
South St	23	14.3	23.0	0.1	10
Total		380.9	613.9	2.4	14

Arterial Level of Service  
 PM Peak Hour No Contraflow Lane Conditions

12/22/2014

Arterial Level of Service: EB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cooke St	24	29.4	44.3	0.1	10
Ward Ave	25	35.1	60.4	0.2	14
	44	3.9	17.7	0.1	25
Kamakee St	26	11.3	24.2	0.1	20
Pensacola St	27	22.8	37.1	0.1	14
Piikoi St	28	24.0	35.6	0.1	11
Kona Iki St	29	14.4	29.0	0.1	18
Ala Moana S.C.	30	28.6	41.0	0.1	11
Mahukona St	31	23.6	43.1	0.2	16
Atkinson Dr	32	21.9	40.6	0.2	17
Kalakaua Ave	33	24.9	35.0	0.1	10
McCully St	34	29.0	52.7	0.2	16
	52	3.3	11.8	0.1	24
Marco Polo Dwy	35	12.9	36.8	0.2	23
University Ave	36	36.3	46.9	0.1	8
	7	12.4	21.5	0.1	14
Kamoku St	37	49.4	55.9	0.1	4
Total		383.1	633.5	2.4	14

Arterial Level of Service: WB Kapiolani Blvd













Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Date St	37	41.4	57.8	0.2	10
	7	3.5	11.0	0.1	22
University Ave	36	25.5	32.8	0.1	9
Isenberg St	35	12.0	23.3	0.1	17
	52	3.7	28.1	0.2	30
McCully St	34	42.1	49.6	0.1	6
Kalakaua Ave	33	26.8	50.1	0.2	17
Atkinson Dr	32	14.3	23.9	0.1	14
Kaheka St	31	20.8	39.9	0.2	17
Keeaumoku St	30	25.1	43.9	0.2	16
Kona Iki St	29	13.7	27.2	0.1	17
	28	18.5	31.9	0.1	16
Pensacola St	27	17.4	30.1	0.1	13
Kamakee St	26	15.3	29.2	0.1	17
	44	3.2	17.2	0.1	28
Ward Ave	25	33.6	45.6	0.1	10
Cooke St	24	16.2	41.4	0.2	20
South St	23	21.1	38.3	0.1	12
Total		354.2	621.4	2.6	15



# HCM Signalized Intersection Capacity Analysis

## 23: South St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑				↑↑↑		↑↑↑				
Volume (vph)	0	1037	0	0	0	823	0	1492	83	0	0	0
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				
Lane Util. Factor		0.91				0.76		0.81				
Frt		1.00				0.85		0.99				
Flt Protected		1.00				1.00		1.00				
Satd. Flow (prot)		5085				3610		7483				
Flt Permitted		1.00				1.00		1.00				
Satd. Flow (perm)		5085				3610		7483				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94	0.92
Adj. Flow (vph)	0	1103	0	0	0	876	0	1587	90	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1103	0	0	0	876	0	1669	0	0	0	0
Turn Type		NA				Prot		NA				
Protected Phases		6				6		4				
Permitted Phases												
Actuated Green, G (s)		47.6				47.6		41.5				
Effective Green, g (s)		47.6				47.6		41.5				
Actuated g/C Ratio		0.48				0.48		0.42				
Clearance Time (s)		5.0				5.0		5.0				
Vehicle Extension (s)		3.0				3.0		3.0				
Lane Grp Cap (vph)		2442				1733		3133				
v/s Ratio Prot		0.22				c0.24		c0.22				
v/s Ratio Perm												
v/c Ratio		0.45				0.51		0.53				
Uniform Delay, d1		17.1				17.7		21.5				
Progression Factor		1.00				1.00		1.00				
Incremental Delay, d2		0.1				0.2		0.2				
Delay (s)		17.2				17.9		21.7				
Level of Service		B				B		C				
Approach Delay (s)		17.2			17.9			21.7			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		19.4				HCM 2000 Level of Service		B				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		99.1				Sum of lost time (s)		10.0				
Intersection Capacity Utilization		46.8%				ICU Level of Service		A				
Analysis Period (min)		15										
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 24: Cooke St & Kapiolani Blvd

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1032	52	335	732	110	77	336	180	11	38	25
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.86		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flt		0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		6359		1770	1826		1770	1863	1583	1770	1752	
Flt Permitted		0.92		0.15	1.00		0.72	1.00	1.00	0.33	1.00	
Satd. Flow (perm)		5881		276	1826		1334	1863	1583	620	1752	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	9	1042	53	338	739	111	78	339	182	11	38	25
RTOR Reduction (vph)	0	7	0	0	5	0	0	0	64	0	18	0
Lane Group Flow (vph)	0	1097	0	338	845	0	78	339	118	11	45	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6		5	2			4			8	
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		27.4		49.0	49.0		21.6	21.6	21.6	21.6	21.6	
Effective Green, g (s)		27.4		49.0	49.0		21.6	21.6	21.6	21.6	21.6	
Actuated g/C Ratio		0.34		0.61	0.61		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1999		475	1110		357	499	424	166	469	
v/s Ratio Prot				0.15	c0.46			c0.18			0.03	
v/s Ratio Perm		0.19		0.29			0.06		0.07	0.02		
v/c Ratio		0.55		0.71	0.76		0.22	0.68	0.28	0.07	0.10	
Uniform Delay, d1		21.6		13.7	11.5		22.9	26.4	23.3	22.0	22.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3		5.0	3.1		0.3	3.7	0.4	0.2	0.1	
Delay (s)		21.9		18.7	14.7		23.2	30.1	23.7	22.2	22.2	
Level of Service		C		B	B		C	C	C	C	C	
Approach Delay (s)		21.9			15.8			27.2			22.2	
Approach LOS		C			B			C			C	













### Intersection Summary

HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	→		↑↑		↙	↑↑	↗	↙	↑↑	↘
Volume (vph)	0	1189	143	0	1042	144	156	628	251	249	728	136
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	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.86			0.95		1.00	0.95	1.00	1.00	0.95	
Flt		0.98			0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		6304			3475		1770	3539	1583	1770	3456	
Flt Permitted		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		6304			3475		1770	3539	1583	1770	3456	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1252	151	0	1097	152	164	661	264	262	766	143
RTOR Reduction (vph)	0	18	0	0	9	0	0	0	80	0	13	0
Lane Group Flow (vph)	0	1385	0	0	1240	0	164	661	184	262	896	0
Turn Type		NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		44.4			44.4		13.3	29.0	29.0	20.1	35.8	
Effective Green, g (s)		44.4			44.4		13.3	29.0	29.0	20.1	35.8	
Actuated g/C Ratio		0.41			0.41		0.12	0.27	0.27	0.19	0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		2579			1422		216	945	423	327	1140	
v/s Ratio Prot		0.22			c0.36		0.09	0.19		c0.15	c0.26	
v/s Ratio Perm									0.12			
v/c Ratio		0.54			0.87		0.76	0.70	0.44	0.80	0.79	
Uniform Delay, d1		24.3			29.4		46.1	35.8	33.0	42.3	32.9	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			6.2		14.2	2.3	0.7	13.2	3.6	
Delay (s)		24.5			35.6		60.2	38.1	33.7	55.4	36.5	
Level of Service		C			D		E	D	C	E	D	
Approach Delay (s)		24.5			35.6			40.4			40.7	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 26: Kamakee St & Kapiolani Blvd

12/15/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↘	↗
Volume (vph)	1424	133	0	998	122	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.86			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	6326			3539	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	6326			3539	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1499	140	0	1051	128	296
RTOR Reduction (vph)	15	0	0	0	0	16
Lane Group Flow (vph)	1624	0	0	1051	128	280
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	27.2	27.2
Effective Green, g (s)	32.0			32.0	27.2	27.2
Actuated g/C Ratio	0.46			0.46	0.39	0.39
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2925			1636	695	622
v/s Ratio Prot	0.26			c0.30	0.07	
v/s Ratio Perm						c0.18
v/c Ratio	0.56			0.64	0.18	0.45
Uniform Delay, d1	13.5			14.2	13.7	15.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.9	0.1	0.5
Delay (s)	13.7			15.1	13.9	16.0
Level of Service	B			B	B	B
Approach Delay (s)	13.7			15.1	15.4	
Approach LOS	B			B	B	














### Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 27: Pensacola St & Kapiolani Blvd

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑			↑↑						↑↑	
Volume (vph)	0	1525	192	0	850	0	0	0	0	305	765	172
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	5.0	5.0
Lane Util. Factor		0.86			0.95					1.00	0.95	1.00
Frt		0.98			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	1.00	1.00
Satd. Flow (prot)		6300			3539					1770	3539	1583
Flt Permitted		1.00			1.00					0.95	1.00	1.00
Satd. Flow (perm)		6300			3539					1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1589	200	0	885	0	0	0	0	318	797	179
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	62
Lane Group Flow (vph)	0	1770	0	0	885	0	0	0	0	318	797	117
Turn Type		NA			NA					Perm	NA	Perm
Protected Phases		2			6						4	
Permitted Phases										4		4
Actuated Green, G (s)		40.7			40.7					31.6	31.6	31.6
Effective Green, g (s)		40.7			40.7					31.6	31.6	31.6
Actuated g/C Ratio		0.49			0.49					0.38	0.38	0.38
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3115			1750					679	1358	607
v/s Ratio Prot		c0.28			0.25						c0.23	
v/s Ratio Perm										0.18		0.07
v/c Ratio		0.57			0.51					0.47	0.59	0.19
Uniform Delay, d1		14.6			14.0					19.0	20.2	16.9
Progression Factor		1.00			1.00					1.00	1.00	1.00
Incremental Delay, d2		0.2			0.2					0.5	0.7	0.2
Delay (s)		14.9			14.3					19.6	20.8	17.0
Level of Service		B			B					B	C	B
Approach Delay (s)		14.9			14.3				0.0		20.0	
Approach LOS		B			B				A		B	

### Intersection Summary

HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	82.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 28: Piikoi St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑			↑↑		↘	↑↑↑	↗			
Volume (vph)	0	1678	126	0	696	257	174	1173	204	0	0	0
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	5.0	5.0			
Lane Util. Factor		0.86			0.95		1.00	0.91	1.00			
Frt		0.99			0.96		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		6341			3396		1770	5085	1583			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		6341			3396		1770	5085	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1785	134	0	740	273	185	1248	217	0	0	0
RTOR Reduction (vph)	0	10	0	0	9	0	0	0	11	0	0	0
Lane Group Flow (vph)	0	1909	0	0	1004	0	185	1248	206	0	0	0
Turn Type		NA			NA		Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases							8		8			
Actuated Green, G (s)		48.0			48.0		39.3	39.3	39.3			
Effective Green, g (s)		48.0			48.0		39.3	39.3	39.3			
Actuated g/C Ratio		0.49			0.49		0.40	0.40	0.40			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		3128			1675		714	2053	639			
v/s Ratio Prot		c0.30			0.30			c0.25				
v/s Ratio Perm							0.10		0.13			
v/c Ratio		0.61			0.60		0.26	0.61	0.32			
Uniform Delay, d1		17.9			17.7		19.3	22.9	19.9			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.4			0.6		0.2	0.5	0.3			
Delay (s)		18.2			18.3		19.5	23.4	20.2			
Level of Service		B			B		B	C	C			
Approach Delay (s)		18.2			18.3			22.6			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.8				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			97.3				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			58.5%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 29: Kona Iki St & Kapiolani Blvd














12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↘	
Volume (vph)	1648	161	0	772	161	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	
Lane Util. Factor	0.86			0.95	1.00	
Frt	0.99			1.00	0.95	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	6322			3539	1711	
Flt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	6322			3539	1711	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1665	163	0	780	163	107
RTOR Reduction (vph)	15	0	0	0	11	0
Lane Group Flow (vph)	1813	0	0	780	259	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	8	
Permitted Phases						
Actuated Green, G (s)	38.2			38.2	27.3	
Effective Green, g (s)	38.2			38.2	27.3	
Actuated g/C Ratio	0.51			0.51	0.36	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3198			1790	618	
v/s Ratio Prot	c0.29			0.22	c0.15	
v/s Ratio Perm						
v/c Ratio	0.57			0.44	0.42	
Uniform Delay, d1	12.9			11.8	18.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.2			0.2	0.5	
Delay (s)	13.2			12.0	18.6	
Level of Service	B			B	B	
Approach Delay (s)	13.2			12.0	18.6	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			13.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			75.5		Sum of lost time (s)	10.0
Intersection Capacity Utilization			50.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
 30: Kapiolani Blvd & Keeaumoku St

12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		←↑↑↑			↑↑			↑↑↑	↗		←↑↑		
Volume (vph)	78	1513	119	0	721	108	0	556	31	228	624	59	
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	5.0		5.0		
Lane Util. Factor		0.86			0.95			0.91	1.00		0.91		
Frt		0.99			0.98			1.00	0.85		0.99		
Flt Protected		1.00			1.00			1.00	1.00		0.99		
Satd. Flow (prot)		6327			3470			5085	1583		4974		
Flt Permitted		0.81			1.00			1.00	1.00		0.70		
Satd. Flow (perm)		5131			3470			5085	1583		3517		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	81	1576	124	0	751	112	0	579	32	238	650	61	
RTOR Reduction (vph)	0	10	0	0	10	0	0	0	23	0	7	0	
Lane Group Flow (vph)	0	1771	0	0	853	0	0	579	9	0	942	0	
Turn Type	Perm	NA			NA			NA	Perm	pm+pt	NA		
Protected Phases		2			6			8		7	4		
Permitted Phases	2								8	4			
Actuated Green, G (s)		47.6			47.6			28.5	28.5		39.3		
Effective Green, g (s)		47.6			47.6			28.5	28.5		39.3		
Actuated g/C Ratio		0.49			0.49			0.29	0.29		0.41		
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0		
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)		2520			1704			1495	465		1513		
v/s Ratio Prot					0.25			0.11			c0.04		
v/s Ratio Perm		c0.35							0.01		c0.22		
v/c Ratio		0.70			0.50			0.39	0.02		0.62		
Uniform Delay, d1		19.2			16.6			27.2	24.3		22.9		
Progression Factor		1.00			1.00			1.00	1.00		1.00		
Incremental Delay, d2		0.9			0.2			0.2	0.0		0.8		
Delay (s)		20.1			16.9			27.4	24.3		23.7		
Level of Service		C			B			C	C		C		
Approach Delay (s)		20.1			16.9			27.2			23.7		
Approach LOS		C			B			C			C		























Intersection Summary

HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 31: Mahukona St/Kaheka St & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			 			 			 	
Volume (vph)	33	1615	81	0	782	263	19	311	77	120	390	74
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			5.0	5.0
Lane Util. Factor		0.86			0.95			0.95			0.95	1.00
Frt		0.99			0.96			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)		6357			3406			3431			3498	1583
Flt Permitted		0.89			1.00			0.92			0.71	1.00
Satd. Flow (perm)		5639			3406			3156			2501	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	1718	86	0	832	280	20	331	82	128	415	79
RTOR Reduction (vph)	0	6	0	0	29	0	0	8	0	0	0	50
Lane Group Flow (vph)	0	1833	0	0	1083	0	0	425	0	0	543	29
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		4
Actuated Green, G (s)		45.0			45.0			32.4			32.4	32.4
Effective Green, g (s)		45.0			45.0			32.4			32.4	32.4
Actuated g/C Ratio		0.51			0.51			0.37			0.37	0.37
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2903			1753			1169			927	586
v/s Ratio Prot					0.32							
v/s Ratio Perm		c0.33						0.13			c0.22	0.02
v/c Ratio		0.63			0.62			0.36			0.59	0.05
Uniform Delay, d1		15.2			15.1			20.0			22.1	17.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.5			0.7			0.2			1.0	0.0
Delay (s)		15.7			15.7			20.2			23.1	17.7
Level of Service		B			B			C			C	B
Approach Delay (s)		15.7			15.7			20.2			22.4	
Approach LOS		B			B			C			C	

### Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 32: Atkinson Dr & Kapiolani Blvd













12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑			↑↑		↑↑↑↑
Volume (vph)	1537	228	0	1088	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0		5.0
Lane Util. Factor	0.86			0.95		0.64
Fr <sub>t</sub>	0.98			1.00		0.85
Fl <sub>t</sub> Protected	1.00			1.00		1.00
Satd. Flow (prot)	6283			3539		4053
Fl <sub>t</sub> Permitted	1.00			1.00		1.00
Satd. Flow (perm)	6283			3539		4053
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1568	233	0	1110	0	796
RTOR Reduction (vph)	22	0	0	0	0	0
Lane Group Flow (vph)	1779	0	0	1110	0	796
Turn Type	NA			NA		Prot
Protected Phases	2			6		8
Permitted Phases						
Actuated Green, G (s)	38.4			38.4		28.6
Effective Green, g (s)	38.4			38.4		28.6
Actuated g/C Ratio	0.50			0.50		0.37
Clearance Time (s)	5.0			5.0		5.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	3133			1764		1505
v/s Ratio Prot	0.28			c0.31		c0.20
v/s Ratio Perm						
v/c Ratio	0.57			0.63		0.53
Uniform Delay, d <sub>1</sub>	13.5			14.1		18.9
Progression Factor	1.00			1.00		1.00
Incremental Delay, d <sub>2</sub>	0.2			0.7		0.3
Delay (s)	13.7			14.8		19.3
Level of Service	B			B		B
Approach Delay (s)	13.7			14.8	19.3	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			15.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			77.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			48.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

## 33: Kalakaua Ave & Kapiolani Blvd



























12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑			↑↑			↑↑↑	
Volume (vph)	0	1562	752	0	978	152	0	884	51	0	720	110
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			5.0			5.0	
Lane Util. Factor		0.81	0.81		0.95			0.95			0.91	
Frt		0.97	0.85		0.98			0.99			0.98	
Flt Protected		1.00	1.00		1.00			1.00			1.00	
Satd. Flow (prot)		5874	1282		3468			3510			4984	
Flt Permitted		1.00	1.00		1.00			1.00			1.00	
Satd. Flow (perm)		5874	1282		3468			3510			4984	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1594	767	0	998	155	0	902	52	0	735	112
RTOR Reduction (vph)	0	26	45	0	8	0	0	3	0	0	16	0
Lane Group Flow (vph)	0	1913	377	0	1145	0	0	951	0	0	831	0
Turn Type		NA	Prot		NA			NA			NA	
Protected Phases		2	2		6			8			4	
Permitted Phases												
Actuated Green, G (s)		61.6	61.6		61.6			41.4			41.4	
Effective Green, g (s)		61.6	61.6		61.6			41.4			41.4	
Actuated g/C Ratio		0.55	0.55		0.55			0.37			0.37	
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		3202	698		1890			1285			1825	
v/s Ratio Prot		0.33	0.29		c0.33			c0.27			0.17	
v/s Ratio Perm												
v/c Ratio		0.60	0.54		0.61			0.74			0.46	
Uniform Delay, d1		17.3	16.6		17.5			31.1			27.2	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		0.3	0.8		0.6			2.3			0.2	
Delay (s)		17.6	17.4		18.0			33.4			27.4	
Level of Service		B	B		B			C			C	
Approach Delay (s)		17.6			18.0			33.4			27.4	
Approach LOS		B			B			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.1									
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			113.0									
Intersection Capacity Utilization			66.3%						10.0			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 34: McCully St & Kapiolani Blvd













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			 			 			 	
Volume (vph)	160	1373	91	0	814	38	200	588	307	39	588	61
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.86			0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99			0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6348			3515		1770	3539	1583	1770	3489	
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6348			3515		1770	3539	1583	1770	3489	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	163	1401	93	0	831	39	204	600	313	40	600	62
RTOR Reduction (vph)	0	7	0	0	2	0	0	0	61	0	5	0
Lane Group Flow (vph)	163	1487	0	0	868	0	204	600	252	40	657	0
Turn Type	Prot	NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	15.6	57.5			36.9		18.8	42.8	42.8	5.8	29.8	
Effective Green, g (s)	15.6	57.5			36.9		18.8	42.8	42.8	5.8	29.8	
Actuated g/C Ratio	0.13	0.47			0.30		0.16	0.35	0.35	0.05	0.25	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	228	3014			1071		274	1250	559	84	858	
v/s Ratio Prot	c0.09	0.23			c0.25		c0.12	0.17		0.02	c0.19	
v/s Ratio Perm									0.16			
v/c Ratio	0.71	0.49			0.81		0.74	0.48	0.45	0.48	0.77	
Uniform Delay, d1	50.6	21.8			38.9		48.9	30.5	30.1	56.2	42.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.2	0.1			4.7		10.5	0.3	0.6	4.2	4.1	
Delay (s)	60.8	21.9			43.6		59.3	30.8	30.7	60.4	46.5	
Level of Service	E	C			D		E	C	C	E	D	
Approach Delay (s)		25.8			43.6			36.0			47.3	
Approach LOS		C			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.4				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			121.1				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			78.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis






















## 35: Kapiolani Blvd & Isenberg St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑			↑↑			↖	↗		↖	↗
Volume (vph)	0	1660	1	0	835	60	16	20	12	132	51	37
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	5.0		5.0	5.0
Lane Util. Factor		0.86			0.95			1.00	1.00		1.00	1.00
Fr't		1.00			0.99			1.00	0.85		1.00	0.85
Flt Protected		1.00			1.00			0.98	1.00		0.97	1.00
Satd. Flow (prot)		6407			3504			1822	1583		1798	1583
Flt Permitted		1.00			1.00			0.86	1.00		0.76	1.00
Satd. Flow (perm)		6407			3504			1598	1583		1420	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1747	1	0	879	63	17	21	13	139	54	39
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	9	0	0	28
Lane Group Flow (vph)	0	1748	0	0	938	0	0	38	4	0	193	11
Turn Type		NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)		38.2			38.2			18.9	18.9		18.9	18.9
Effective Green, g (s)		38.2			38.2			18.9	18.9		18.9	18.9
Actuated g/C Ratio		0.57			0.57			0.28	0.28		0.28	0.28
Clearance Time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3647			1994			450	445		399	445
v/s Ratio Prot		c0.27			0.27							
v/s Ratio Perm								0.02	0.00		c0.14	0.01
v/c Ratio		0.48			0.47			0.08	0.01		0.48	0.02
Uniform Delay, d1		8.6			8.5			17.7	17.4		20.0	17.4
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.2			0.1	0.0		0.9	0.0
Delay (s)		8.7			8.7			17.8	17.4		21.0	17.5
Level of Service		A			A			B	B		C	B
Approach Delay (s)		8.7			8.7			17.7			20.4	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.7									
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			67.1									
Intersection Capacity Utilization			50.0%						10.0			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 36: University Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	1385	198	118	878	17	64	140	51	88	116	96
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	5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.86		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Fr't	1.00	0.98		1.00	1.00		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	6288		1770	1858		1770	3398		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	6288		1770	1858		1770	3398		1770	3539	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	178	1413	202	120	896	17	65	143	52	90	118	98
RTOR Reduction (vph)	0	15	0	0	0	0	0	29	0	0	0	83
Lane Group Flow (vph)	178	1600	0	120	913	0	65	166	0	90	118	15
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												8
Actuated Green, G (s)	13.1	64.7		13.1	64.7		7.8	20.2		7.1	19.5	19.5
Effective Green, g (s)	13.1	64.7		13.1	64.7		7.8	20.2		7.1	19.5	19.5
Actuated g/C Ratio	0.10	0.52		0.10	0.52		0.06	0.16		0.06	0.16	0.16
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	185	3252		185	960		110	548		100	551	246
v/s Ratio Prot	c0.10	0.25		0.07	c0.49		0.04	c0.05		c0.05	0.03	
v/s Ratio Perm												0.01
w/c Ratio	0.96	0.49		0.65	0.95		0.59	0.30		0.90	0.21	0.06
Uniform Delay, d1	55.8	19.6		53.8	28.7		57.1	46.2		58.6	46.1	45.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	54.9	0.1		7.6	18.2		8.2	0.3		58.9	0.2	0.1
Delay (s)	110.6	19.7		61.4	46.9		65.3	46.6		117.6	46.3	45.1
Level of Service	F	B		E	D		E	D		F	D	D
Approach Delay (s)		28.7			48.6			51.2			66.9	
Approach LOS		C			D			D			E	

**Intersection Summary**

HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	125.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014

	→	↘	↗	←	↖	↙	↘	↑	↗	↘	↓	↙
Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑	↗↘		↑↑	↗		↘	↕			↖↑	↙
Volume (vph)	971	512	78	792	295	33	156	273	31	80	279	104
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	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	0.91	0.88		0.95	1.00		0.95	0.95			0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.95		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frft	1.00	0.85		1.00	0.85		1.00	0.99			1.00	0.85
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	5085	2787		3539	1502		1681	1733			3500	1583
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	5085	2787		3539	1502		1681	1733			3500	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	991	522	80	808	301	34	159	279	32	82	285	106
RTOR Reduction (vph)	0	67	0	0	208	0	0	3	0	0	0	79
Lane Group Flow (vph)	991	535	0	808	93	0	177	324	0	0	367	41
Confl. Peds. (#/hr)			20		34				20			
Turn Type	NA	Prot		NA	Perm	Split	Split	NA		Split	NA	Prot
Protected Phases	2	2		6		8	8	8		4	4	4
Permitted Phases					6							
Actuated Green, G (s)	37.3	37.3		37.3	37.3		27.9	27.9			20.9	20.9
Effective Green, g (s)	37.3	37.3		37.3	37.3		27.9	27.9			20.9	20.9
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.22	0.22			0.16	0.16
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	1469	805		1022	433		363	374			566	256
v/s Ratio Prot	0.19	0.19		c0.23			0.11	c0.19			c0.10	0.03
v/s Ratio Perm					0.06							
v/c Ratio	0.67	0.66		0.79	0.22		0.49	0.87			0.65	0.16
Uniform Delay, d1	40.5	40.4		42.3	34.8		44.3	48.8			50.7	46.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.2	2.1		4.2	0.3		1.0	18.5			2.6	0.3
Delay (s)	41.8	42.5		46.5	35.1		45.4	67.3			53.2	46.9
Level of Service	D	D		D	D		D	E			D	D
Approach Delay (s)	42.0			43.4				59.6			51.7	
Approach LOS	D			D				E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			47.0			HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			129.1			Sum of lost time (s)		20.0				
Intersection Capacity Utilization			99.6%			ICU Level of Service		F				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 37: Kamoku St & Date St & Kapiolani Blvd

12/15/2014



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations			YY		
Volume (vph)	14	51	129	101	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			5.0		
Lane Util. Factor			0.97		
Frb, ped/bikes			0.97		
Ftpb, ped/bikes			1.00		
Frt			0.91		
Flt Protected			0.98		
Satd. Flow (prot)			3113		
Flt Permitted			0.98		
Satd. Flow (perm)			3113		
Peak-hour factor, PHF	0.98	0.92	0.98	0.98	0.98
Adj. Flow (vph)	14	55	132	103	174
RTOR Reduction (vph)	0	0	77	0	0
Lane Group Flow (vph)	0	0	387	0	0
Confl. Peds. (#/hr)	20				20
Turn Type		Prot	Prot		
Protected Phases		3	3		
Permitted Phases					
Actuated Green, G (s)			23.0		
Effective Green, g (s)			23.0		
Actuated g/C Ratio			0.18		
Clearance Time (s)			5.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			554		
v/s Ratio Prot			0.12		
v/s Ratio Perm					
v/c Ratio			0.70		
Uniform Delay, d1			49.8		
Progression Factor			1.00		
Incremental Delay, d2			3.8		
Delay (s)			53.6		
Level of Service			D		
Approach Delay (s)			53.6		
Approach LOS			D		
<b>Intersection Summary</b>					

Arterial Level of Service  
PM Peak Hour Full Contraflow Lane Conditions

12/22/2014

Arterial Level of Service: EB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	45	2.0	9.2	0.1	24
Cooke St	24	24.4	32.3	0.1	8
Ward Ave	25	24.5	50.0	0.2	16
	44	3.3	17.0	0.1	27
Kamakee St	26	11.5	24.4	0.1	20
Pensacola St	27	19.6	33.9	0.1	15
Piikoi St	28	23.4	35.2	0.1	12
Kona Iki St	29	13.9	28.3	0.1	18
Ala Moana S.C.	30	24.2	36.6	0.1	12
Mahukona St	31	21.4	40.8	0.2	17
Atkinson Dr	32	17.3	36.1	0.2	19
Kalakaua Ave	33	21.0	31.6	0.1	11
McCully St	34	23.4	46.8	0.2	18
	52	3.0	11.5	0.1	25
Marco Polo Dwy	35	12.3	36.1	0.2	24
University Ave	36	51.5	61.8	0.1	6
	7	6.2	15.6	0.1	19
Kamoku St	37	44.2	50.0	0.1	5
Total		347.2	597.3	2.4	15

Arterial Level of Service: WB Kapiolani Blvd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	7	7.9	15.6	0.1	15
University Ave	36	27.9	35.5	0.1	8
Isenberg St	35	9.8	21.1	0.1	19
	52	2.9	27.5	0.2	31
McCully St	34	39.3	46.9	0.1	6
Kalakaua Ave	33	27.6	50.6	0.2	17
Atkinson Dr	32	15.3	25.2	0.1	13
Kaheka St	31	26.4	45.2	0.2	15
Keeaumoku St	30	28.1	47.0	0.2	15
Kona Iki St	29	14.2	27.6	0.1	16
	28	21.8	35.2	0.1	15
Pensacola St	27	19.8	32.5	0.1	12
Kamakee St	26	17.0	31.1	0.1	16
	44	4.5	18.5	0.1	26
Ward Ave	25	50.0	62.7	0.1	7
Cooke St	24	20.7	45.9	0.2	18
	45	3.1	11.6	0.1	21
South St	23	15.0	24.0	0.1	9
Total		351.3	603.6	2.4	14

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



**APPENDIX D**  
**CAPACITY ANALYSIS CALCULATIONS**  
**WARD AVENUE**

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# HCM Signalized Intersection Capacity Analysis

## 19: Ward Ave & Kinau St




















12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						  			  	
Volume (vph)	204	1122	334	0	0	0	0	363	17	194	838	0
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	
Lane Util. Factor		0.86						1.00			0.91	
Frbp, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frnt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6052						1844			5016	
Flt Permitted		0.99						1.00			0.70	
Satd. Flow (perm)		6052						1844			3538	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	219	1206	359	0	0	0	0	390	18	209	901	0
RTOR Reduction (vph)	0	46	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	1738	0	0	0	0	0	406	0	0	1110	0
Confl. Peds. (#/hr)	29		71						71	71		
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)		34.8						22.6			33.0	
Effective Green, g (s)		34.8						22.6			33.0	
Actuated g/C Ratio		0.45						0.29			0.42	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2707						535			1603	
v/s Ratio Prot								0.22			c0.05	
v/s Ratio Perm		0.29									c0.25	
v/c Ratio		0.64						0.76			0.69	
Uniform Delay, d1		16.7						25.1			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						6.1			1.3	
Delay (s)		17.2						31.2			19.6	
Level of Service		B						C			B	
Approach Delay (s)		17.2			0.0			31.2			19.6	
Approach LOS		B			A			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.7								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			77.8							15.0		
Intersection Capacity Utilization			78.9%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 19: Ward Ave & Kinau St


















12/15/2014

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		  						 			 			
Volume (vph)	380	1075	411	0	0	0	0	902	23	98	388	0		
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			
Lane Util. Factor		0.86						0.95			0.95			
Flt		0.97						1.00			1.00			
Flt Protected		0.99						1.00			0.99			
Satd. Flow (prot)		6134						3526			3504			
Flt Permitted		0.99						1.00			0.57			
Satd. Flow (perm)		6134						3526			2019			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		
Adj. Flow (vph)	396	1120	428	0	0	0	0	940	24	102	404	0		
RTOR Reduction (vph)	0	54	0	0	0	0	0	2	0	0	0	0		
Lane Group Flow (vph)	0	1890	0	0	0	0	0	962	0	0	506	0		
Turn Type	Perm	NA						NA		pm+pt	NA			
Protected Phases		4						2		1	6			
Permitted Phases	4									6				
Actuated Green, G (s)		36.1						30.2			39.2			
Effective Green, g (s)		36.1						30.2			39.2			
Actuated g/C Ratio		0.42						0.35			0.46			
Clearance Time (s)		5.0						5.0			5.0			
Vehicle Extension (s)		3.0						3.0			3.0			
Lane Grp Cap (vph)		2595						1248			997			
v/s Ratio Prot								c0.27			c0.02			
v/s Ratio Perm		0.31									0.21			
v/c Ratio		0.73						0.77			0.51			
Uniform Delay, d1		20.5						24.5			16.2			
Progression Factor		1.00						1.00			1.00			
Incremental Delay, d2		1.0						3.0			0.4			
Delay (s)		21.6						27.5			16.7			
Level of Service		C						C			B			
Approach Delay (s)		21.6			0.0			27.5			16.7			
Approach LOS		C			A			C			B			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			22.5									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.74											
Actuated Cycle Length (s)			85.3								15.0		Sum of lost time (s)	
Intersection Capacity Utilization			80.0%										ICU Level of Service	D
Analysis Period (min)			15											
c	Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

20: Ward Ave & Beretania St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	316	2502	3	0	387	0	0	791	390
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			5.0	5.0
Lane Util. Factor				1.00	0.81			1.00			0.91	1.00
Frb, ped/bikes				1.00	1.00			1.00			1.00	0.88
Fipb, ped/bikes				0.92	1.00			1.00			1.00	1.00
Frt				1.00	1.00			1.00			1.00	0.85
Flt Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1637	7541			1863			5085	1387
Flt Permitted				0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)				1637	7541			1863			5085	1387
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	329	2606	3	0	403	0	0	824	406
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	0	0	329	2609	0	0	403	0	0	824	392
Confl. Peds. (#/hr)				62		83						113
Turn Type				Perm	NA			NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8								6
Actuated Green, G (s)				38.5	38.5			32.3			32.3	32.3
Effective Green, g (s)				38.5	38.5			32.3			32.3	32.3
Actuated g/C Ratio				0.48	0.48			0.40			0.40	0.40
Clearance Time (s)				5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				780	3593			744			2032	554
v/s Ratio Prot					c0.35			0.22			0.16	
v/s Ratio Perm				0.20								c0.28
v/c Ratio				0.42	0.73			0.54			0.41	0.71
Uniform Delay, d1				13.9	16.9			18.6			17.4	20.3
Progression Factor				1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2				0.4	0.7			0.8			0.1	4.1
Delay (s)				14.2	17.7			19.4			17.5	24.4
Level of Service				B	B			B			B	C
Approach Delay (s)		0.0			17.3			19.4			19.8	
Approach LOS		A			B			B			B	

## Intersection Summary

HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		



















c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

20: Ward Ave & Beretania St

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	334	1920	258	0	698	0	0	634	140
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			5.0	5.0
Lane Util. Factor				1.00	0.81			0.95			0.95	1.00
Fr <sub>t</sub>				1.00	0.98			1.00			1.00	0.85
Fl <sub>t</sub> Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1770	7410			3539			3539	1583
Fl <sub>t</sub> Permitted				0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)				1770	7410			3539			3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	352	2021	272	0	735	0	0	667	147
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	0	0	352	2270	0	0	735	0	0	667	130
Turn Type				Perm	NA			NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8								6
Actuated Green, G (s)				44.2	44.2			23.0			23.0	23.0
Effective Green, g (s)				44.2	44.2			23.0			23.0	23.0
Actuated g/C Ratio				0.57	0.57			0.30			0.30	0.30
Clearance Time (s)				5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				1013	4242			1054			1054	471
v/s Ratio Prot					c0.31			c0.21			0.19	
v/s Ratio Perm				0.20								0.08
v/c Ratio				0.35	0.54			0.70			0.63	0.28
Uniform Delay, d <sub>1</sub>				8.8	10.2			24.0			23.4	20.7
Progression Factor				1.00	1.00			1.00			1.00	1.00
Incremental Delay, d <sub>2</sub>				0.2	0.1			2.0			1.3	0.3
Delay (s)				9.0	10.3			26.0			24.7	21.1
Level of Service				A	B			C			C	C
Approach Delay (s)		0.0			10.1			26.0			24.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Unsignalized Intersection Capacity Analysis

## 21: Ward Ave & Hotel St

12/15/2014

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					  	
Volume (veh/h)	15	18	0	360	802	319
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	20	0	391	872	347
Pedestrians	146			18	14	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	12			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				334	366	
pX, platoon unblocked	0.93	0.89	0.89			
vC, conflicting volume	1596	628	1364			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1080	171	994			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	97	100			
cM capacity (veh/h)	172	652	543			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	SB 3
Volume Total	16	20	391	349	349	521
Volume Left	16	0	0	0	0	0
Volume Right	0	20	0	0	0	347
cSH	172	652	1700	1700	1700	1700
Volume to Capacity	0.09	0.03	0.23	0.21	0.21	0.31
Queue Length 95th (ft)	8	2	0	0	0	0
Control Delay (s)	28.1	10.7	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	18.6		0.0	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			39.1%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 21: Ward Ave & Hotel St

12/15/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↕	↕	
Volume (veh/h)	79	73	0	639	810	166
Sign Control	Stop			Free		Free
Grade	0%			0%		0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	81	74	0	652	827	169
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				328	366	
pX, platoon unblocked	0.87	0.84	0.84			
vC, conflicting volume	1237	498	996			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	32	622			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	91	100			
cM capacity (veh/h)	330	873	805			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	81	74	326	326	551	445
Volume Left	81	0	0	0	0	0
Volume Right	0	74	0	0	0	169
cSH	330	873	1700	1700	1700	1700
Volume to Capacity	0.24	0.09	0.19	0.19	0.32	0.26
Queue Length 95th (ft)	24	7	0	0	0	0
Control Delay (s)	19.4	9.5	0.0	0.0	0.0	0.0
Lane LOS	C	A				
Approach Delay (s)	14.7		0.0		0.0	
Approach LOS	B					

Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			38.9%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Signalized Intersection Capacity Analysis

## 22: Ward Ave & King St

12/15/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←B→						↑	↗		↑↑↑	
Volume (vph)	165	1683	67	0	0	0	0	208	305	0	802	0
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		5.0	
Lane Util. Factor		0.76						1.00	1.00		0.91	
Frb, ped/bikes		0.99						1.00	0.87		1.00	
Flpb, ped/bikes		0.98						1.00	1.00		1.00	
Frt		0.99						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		1.00	
Satd. Flow (prot)		8200						1863	1379		5085	
Flt Permitted		1.00						1.00	1.00		1.00	
Satd. Flow (perm)		8200						1863	1379		5085	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	192	1957	78	0	0	0	0	242	355	0	933	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	15	0	0	0
Lane Group Flow (vph)	0	2221	0	0	0	0	0	242	340	0	933	0
Confl. Peds. (#/hr)	148		180							147		
Turn Type	Perm	NA						NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4								2			
Actuated Green, G (s)		36.1						29.8	29.8		29.8	
Effective Green, g (s)		36.1						29.8	29.8		29.8	
Actuated g/C Ratio		0.48						0.39	0.39		0.39	
Clearance Time (s)		5.0						5.0	5.0		5.0	
Vehicle Extension (s)		3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)		3900						731	541		1996	
v/s Ratio Prot								0.13			0.18	
v/s Ratio Perm		0.27							c0.25			
v/c Ratio		0.57						0.33	0.63		0.47	
Uniform Delay, d1		14.3						16.1	18.6		17.1	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.2						0.3	2.3		0.2	
Delay (s)		14.5						16.4	20.9		17.3	
Level of Service		B						B	C		B	
Approach Delay (s)		14.5			0.0			19.1			17.3	
Approach LOS		B			A			B			B	













Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 22: Ward Ave & King St














12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔						↑↑	↗		↑↑		
Volume (vph)	257	2491	50	0	0	0	0	332	340	0	950	0	
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		5.0		
Lane Util. Factor		0.76						0.95	1.00		0.95		
Frt		1.00						1.00	0.85		1.00		
Flt Protected		1.00						1.00	1.00		1.00		
Satd. Flow (prot)		8433						3539	1583		3539		
Flt Permitted		1.00						1.00	1.00		1.00		
Satd. Flow (perm)		8433						3539	1583		3539		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	268	2595	52	0	0	0	0	346	354	0	990	0	
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	15	0	0	0	
Lane Group Flow (vph)	0	2911	0	0	0	0	0	346	339	0	990	0	
Turn Type	Perm	NA						NA	Perm		NA		
Protected Phases		4						2			6		
Permitted Phases	4								2				
Actuated Green, G (s)		41.1						32.4	32.4		32.4		
Effective Green, g (s)		41.1						32.4	32.4		32.4		
Actuated g/C Ratio		0.49						0.39	0.39		0.39		
Clearance Time (s)		5.0						5.0	5.0		5.0		
Vehicle Extension (s)		3.0						3.0	3.0		3.0		
Lane Grp Cap (vph)		4150						1373	614		1373		
v/s Ratio Prot								0.10			c0.28		
v/s Ratio Perm		0.35							0.21				
v/c Ratio		0.70						0.25	0.55		0.72		
Uniform Delay, d1		16.4						17.3	19.9		21.7		
Progression Factor		1.00						1.00	1.00		1.00		
Incremental Delay, d2		0.5						0.1	1.1		1.9		
Delay (s)		17.0						17.4	21.0		23.6		
Level of Service		B						B	C		C		
Approach Delay (s)		17.0			0.0			19.2			23.6		
Approach LOS		B			A			B			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			83.5									Sum of lost time (s)	10.0
Intersection Capacity Utilization			61.8%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑		↘	↑↑↑		↘	↑↑	↗	↘	↑↑	↘	
Volume (vph)	0	500	82	311	1148	135	83	356	60	102	733	111	
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		5.0	5.0	5.0	5.0	5.0		
Lane Util. Factor		0.95		1.00	0.91		1.00	0.95	1.00	1.00	0.95		
Frbp, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.92	1.00	0.99		
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Fr t		0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98		
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3441		1770	4967		1770	3539	1463	1770	3445		
Flt Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3441		1770	4967		1770	3539	1463	1770	3445		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	521	85	324	1196	141	86	371	62	106	764	116	
RTOR Reduction (vph)	0	12	0	0	13	0	0	0	44	0	10	0	
Lane Group Flow (vph)	0	594	0	324	1324	0	86	371	18	106	870	0	
Confl. Peds. (#/hr)			36	36		56	39		66	66		39	
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA		
Protected Phases		6		5	2		7	4		3	8		
Permitted Phases									4				
Actuated Green, G (s)		25.2		23.4	53.6		7.9	30.8	30.8	9.0	31.9		
Effective Green, g (s)		25.2		23.4	53.6		7.9	30.8	30.8	9.0	31.9		
Actuated g/C Ratio		0.23		0.22	0.49		0.07	0.28	0.28	0.08	0.29		
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)		799		382	2456		128	1005	415	146	1013		
v/s Ratio Prot		c0.17		c0.18	0.27		0.05	0.10		c0.06	c0.25		
v/s Ratio Perm									0.01				
v/c Ratio		0.74		0.85	0.54		0.67	0.37	0.04	0.73	0.86		
Uniform Delay, d1		38.6		40.8	18.9		49.0	31.0	28.1	48.5	36.1		
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		3.8		15.9	0.2		13.0	0.2	0.0	16.4	7.4		
Delay (s)		42.4		56.7	19.1		62.0	31.3	28.2	64.9	43.5		
Level of Service		D		E	B		E	C	C	E	D		
Approach Delay (s)		42.4			26.4			36.0			45.8		
Approach LOS		D			C			D			D		














### Intersection Summary

HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑			↑↑↑		↖	↑↑	↗	↖	↑↑		
Volume (vph)	0	1189	143	0	1042	144	156	628	251	249	728	136	
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	5.0	5.0	5.0	5.0		
Lane Util. Factor		0.91			0.91		1.00	0.95	1.00	1.00	0.95		
Frt		0.98			0.98		1.00	1.00	0.85	1.00	0.98		
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		5003			4992		1770	3539	1583	1770	3456		
Flt Permitted		1.00			1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		5003			4992		1770	3539	1583	1770	3456		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	1252	151	0	1097	152	164	661	264	262	766	143	
RTOR Reduction (vph)	0	12	0	0	15	0	0	0	79	0	13	0	
Lane Group Flow (vph)	0	1391	0	0	1234	0	164	661	185	262	896	0	
Turn Type		NA			NA		Prot	NA	Perm	Prot	NA		
Protected Phases		6			2		7	4		3	8		
Permitted Phases									4				
Actuated Green, G (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4		
Effective Green, g (s)		38.7			38.7		14.7	28.5	28.5	20.6	34.4		
Actuated g/C Ratio		0.38			0.38		0.14	0.28	0.28	0.20	0.33		
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)		1883			1879		253	981	438	354	1156		
v/s Ratio Prot		c0.28			0.25		0.09	0.19		c0.15	c0.26		
v/s Ratio Perm									0.12				
v/c Ratio		0.74			0.66		0.65	0.67	0.42	0.74	0.77		
Uniform Delay, d1		27.7			26.5		41.6	33.0	30.4	38.6	30.7		
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		1.6			0.8		5.6	1.8	0.7	8.1	3.3		
Delay (s)		29.2			27.4		47.2	34.9	31.1	46.7	34.0		
Level of Service		C			C		D	C	C	D	C		
Approach Delay (s)		29.2			27.4			35.8			36.9		
Approach LOS		C			C			D			D		

### Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Arterial Level of Service: NB Ward Ave




















Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Kapiolani Blvd	25	27.5	34.7	0.1	6
	61	2.5	18.4	0.1	24
King St	22	13.3	29.4	0.1	18
Hotel St	21	1.4	11.0	0.1	21
Beretania St	20	19.4	29.2	0.1	9
Kinau St	19	35.3	43.7	0.1	6
Total		99.4	166.4	0.5	12

Arterial Level of Service: SB Ward Ave

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Kinau St	19	20.8	44.6	0.0	5
Beretania St	20	9.6	17.6	0.1	14
Hotel St	21	1.9	12.5	0.1	20
King St	22	14.3	23.3	0.1	10
	61	3.4	20.3	0.1	25
Kapiolani Blvd	25	35.7	50.2	0.1	9
Total		85.8	168.5	0.5	12

HCM Signalized Intersection Capacity Analysis  
 19: Ward Ave & Kinau St

12/15/2014



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 			 	
Volume (vph)	204	1122	334	0	0	0	0	363	17	194	838	0
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	
Lane Util. Factor		0.86						0.95			0.95	
Frb, ped/bikes		0.98						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			0.99	
Frt		0.97						0.99			1.00	
Flt Protected		0.99						1.00			0.99	
Satd. Flow (prot)		6059						3501			3486	
Flt Permitted		0.99						1.00			0.71	
Satd. Flow (perm)		6059						3501			2487	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	219	1206	359	0	0	0	0	390	18	209	901	0
RTOR Reduction (vph)	0	48	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1736	0	0	0	0	0	402	0	0	1110	0
Confl. Peds. (#/hr)	29		71						71	71		
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.2						15.4			41.4	
Effective Green, g (s)		31.2						15.4			41.4	
Actuated g/C Ratio		0.38						0.19			0.50	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2288						652			1500	
v/s Ratio Prot								0.11			c0.19	
v/s Ratio Perm		0.29									c0.18	
v/c Ratio		0.76						0.62			0.74	
Uniform Delay, d1		22.4						30.9			16.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.5						1.7			2.0	
Delay (s)		23.9						32.6			18.3	
Level of Service		C						C			B	
Approach Delay (s)		23.9			0.0			32.6			18.3	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 20: Ward Ave & Beretania St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	316	2502	3	0	387	0	0	791	390
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			5.0	5.0
Lane Util. Factor				1.00	0.81			0.95			0.95	1.00
Frbp, ped/bikes				1.00	1.00			1.00			1.00	0.88
Flpb, ped/bikes				0.92	1.00			1.00			1.00	1.00
Frt				1.00	1.00			1.00			1.00	0.85
Flt Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1636	7542			3539			3539	1387
Flt Permitted				0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)				1636	7542			3539			3539	1387
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	329	2606	3	0	403	0	0	824	406
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	0	0	329	2609	0	0	403	0	0	824	392
Confl. Peds. (#/hr)				62		83						113
Turn Type				Perm	NA			NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8								6
Actuated Green, G (s)				38.5	38.5			32.4			32.4	32.4
Effective Green, g (s)				38.5	38.5			32.4			32.4	32.4
Actuated g/C Ratio				0.48	0.48			0.40			0.40	0.40
Clearance Time (s)				5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				778	3589			1417			1417	555
v/s Ratio Prot					c0.35			0.11			0.23	
v/s Ratio Perm				0.20								c0.28
v/c Ratio				0.42	0.73			0.28			0.58	0.71
Uniform Delay, d1				13.9	17.0			16.4			19.0	20.3
Progression Factor				1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2				0.4	0.8			0.1			0.6	4.1
Delay (s)				14.3	17.7			16.5			19.6	24.3
Level of Service				B	B			B			B	C
Approach Delay (s)		0.0			17.4			16.5			21.1	
Approach LOS		A			B			B			C	













Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 21: Ward Ave & Hotel St













12/15/2014

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Volume (veh/h)	15	18	0	360	802	319
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	20	0	391	872	347
Pedestrians	146			18	14	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	12			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				334	366	
pX, platoon unblocked	0.82	0.82	0.82			
vC, conflicting volume	1401	773	1364			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	999	279	1001			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	96	100			
cM capacity (veh/h)	172	509	494			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	16	20	196	196	581	637
Volume Left	16	0	0	0	0	0
Volume Right	0	20	0	0	0	347
cSH	172	509	1700	1700	1700	1700
Volume to Capacity	0.10	0.04	0.12	0.12	0.34	0.37
Queue Length 95th (ft)	8	3	0	0	0	0
Control Delay (s)	28.2	12.4	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	19.5		0.0		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			48.9%		ICU Level of Service A	
Analysis Period (min)			15			

# HCM Signalized Intersection Capacity Analysis

## 22: Ward Ave & King St













12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔						↑↑	↗		↑↑		
Volume (vph)	165	1683	67	0	0	0	0	208	305	0	802	0	
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		5.0		
Lane Util. Factor		0.76						0.95	1.00		0.95		
Frpb, ped/bikes		0.99						1.00	0.87		1.00		
Flpb, ped/bikes		0.99						1.00	1.00		1.00		
Frt		0.99						1.00	0.85		1.00		
Flt Protected		1.00						1.00	1.00		1.00		
Satd. Flow (prot)		8266						3539	1380		3539		
Flt Permitted		1.00						1.00	1.00		1.00		
Satd. Flow (perm)		8266						3539	1380		3539		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	192	1957	78	0	0	0	0	242	355	0	933	0	
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	14	0	0	0	
Lane Group Flow (vph)	0	2221	0	0	0	0	0	242	341	0	933	0	
Confl. Peds. (#/hr)	148		180						147				
Turn Type	Perm	NA						NA	Perm		NA		
Protected Phases		4						2			6		
Permitted Phases	4								2				
Actuated Green, G (s)		35.1						30.4	30.4		30.4		
Effective Green, g (s)		35.1						30.4	30.4		30.4		
Actuated g/C Ratio		0.46						0.40	0.40		0.40		
Clearance Time (s)		5.0						5.0	5.0		5.0		
Vehicle Extension (s)		3.0						3.0	3.0		3.0		
Lane Grp Cap (vph)		3842						1424	555		1424		
v/s Ratio Prot								0.07			c0.26		
v/s Ratio Perm		0.27							0.25				
v/c Ratio		0.58						0.17	0.61		0.66		
Uniform Delay, d1		14.8						14.5	17.9		18.3		
Progression Factor		1.00						1.00	1.00		1.00		
Incremental Delay, d2		0.2						0.1	2.0		1.1		
Delay (s)		15.0						14.5	19.9		19.4		
Level of Service		B						B	B		B		
Approach Delay (s)		15.0			0.0			17.7			19.4		
Approach LOS		B			A			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			16.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			75.5									Sum of lost time (s)	10.0
Intersection Capacity Utilization			55.1%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑		↵	↑↑	↗	↵	↑↑	↗
Volume (vph)	0	500	82	311	1148	135	83	356	60	102	733	111
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		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.91		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Fit Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		4945		1770	3458		1770	3539	1467	1770	3446	
Fit Permitted		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		4945		1770	3458		1770	3539	1467	1770	3446	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	521	85	324	1196	141	86	371	62	106	764	116
RTOR Reduction (vph)	0	20	0	0	8	0	0	0	44	0	10	0
Lane Group Flow (vph)	0	586	0	324	1329	0	86	371	18	106	870	0
Confl. Peds. (#/hr)			36	36		56	39		66	66		39
Turn Type		NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		21.9		23.1	50.0		7.9	30.3	30.3	9.0	31.4	
Effective Green, g (s)		21.9		23.1	50.0		7.9	30.3	30.3	9.0	31.4	
Actuated g/C Ratio		0.21		0.22	0.48		0.08	0.29	0.29	0.09	0.30	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1038		392	1657		134	1028	426	152	1037	
v/s Ratio Prot		0.12		0.18	c0.38		0.05	0.10		c0.06	c0.25	
v/s Ratio Perm									0.01			
v/c Ratio		0.56		0.83	0.80		0.64	0.36	0.04	0.70	0.84	
Uniform Delay, d1		36.9		38.7	23.0		46.8	29.3	26.6	46.3	34.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.7		13.3	2.9		10.1	0.2	0.0	13.0	6.1	
Delay (s)		37.6		52.0	25.9		56.9	29.5	26.6	59.4	40.2	
Level of Service		D		D	C		E	C	C	E	D	
Approach Delay (s)		37.6			31.0			33.7			42.2	
Approach LOS		D			C			C			D	

**Intersection Summary**

HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: NB Ward Ave

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Kapiolani Blvd	25	34.6	41.6	0.1	5
	61	2.6	18.7	0.1	24
King St	22	11.5	28.2	0.1	18
Hotel St	21	1.5	11.2	0.1	20
Beretania St	20	12.2	22.2	0.1	11
Kinau St	19	28.8	37.5	0.1	7
Total		91.2	159.2	0.5	12

Arterial Level of Service: SB Ward Ave
















Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Kinau St	19	20.7	41.5	0.0	5
Beretania St	20	18.2	25.9	0.1	10
Hotel St	21	2.7	13.4	0.1	19
King St	22	14.6	23.7	0.1	10
	61	3.0	19.7	0.1	26
Kapiolani Blvd	25	64.2	79.3	0.1	6
Total		123.4	203.5	0.5	10



# HCM Signalized Intersection Capacity Analysis

## 19: Ward Ave & Kinau St






















12/15/2014

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	380	1075	411	0	0	0	0	902	23	98	388	0		
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			
Lane Util. Factor		0.86						0.95			0.95			
Frt		0.97						1.00			1.00			
Flt Protected		0.99						1.00			0.99			
Satd. Flow (prot)		6134						3526			3504			
Flt Permitted		0.99						1.00			0.57			
Satd. Flow (perm)		6134						3526			2019			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		
Adj. Flow (vph)	396	1120	428	0	0	0	0	940	24	102	404	0		
RTOR Reduction (vph)	0	54	0	0	0	0	0	2	0	0	0	0		
Lane Group Flow (vph)	0	1890	0	0	0	0	0	962	0	0	506	0		
Turn Type	Perm	NA						NA		pm+pt	NA			
Protected Phases		4						2		1	6			
Permitted Phases	4									6				
Actuated Green, G (s)		36.1						30.2			39.2			
Effective Green, g (s)		36.1						30.2			39.2			
Actuated g/C Ratio		0.42						0.35			0.46			
Clearance Time (s)		5.0						5.0			5.0			
Vehicle Extension (s)		3.0						3.0			3.0			
Lane Grp Cap (vph)		2595						1248			997			
v/s Ratio Prot								c0.27			c0.02			
v/s Ratio Perm		0.31									0.21			
v/c Ratio		0.73						0.77			0.51			
Uniform Delay, d1		20.5						24.5			16.2			
Progression Factor		1.00						1.00			1.00			
Incremental Delay, d2		1.0						3.0			0.4			
Delay (s)		21.6						27.5			16.7			
Level of Service		C						C			B			
Approach Delay (s)		21.6			0.0			27.5			16.7			
Approach LOS		C			A			C			B			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			22.5									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.74											
Actuated Cycle Length (s)			85.3								15.0		Sum of lost time (s)	
Intersection Capacity Utilization			80.0%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

# HCM Signalized Intersection Capacity Analysis

## 20: Ward Ave & Beretania St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					   						 	
Volume (vph)	0	0	0	334	1920	258	0	698	0	0	634	140
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			5.0	5.0
Lane Util. Factor				1.00	0.81			1.00			0.95	1.00
Flt				1.00	0.98			1.00			1.00	0.85
Flt Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1770	7410			1863			3539	1583
Flt Permitted				0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)				1770	7410			1863			3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	352	2021	272	0	735	0	0	667	147
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	0	0	352	2269	0	0	735	0	0	667	134
Turn Type				Perm	NA			NA			NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8								6
Actuated Green, G (s)				31.4	31.4			35.9			35.9	35.9
Effective Green, g (s)				31.4	31.4			35.9			35.9	35.9
Actuated g/C Ratio				0.41	0.41			0.46			0.46	0.46
Clearance Time (s)				5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				718	3010			865			1643	735
v/s Ratio Prot					c0.31			c0.39			0.19	
v/s Ratio Perm				0.20								0.08
v/c Ratio				0.49	0.75			0.85			0.41	0.18
Uniform Delay, d1				17.0	19.6			18.3			13.7	12.1
Progression Factor				1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2				0.5	1.1			7.8			0.2	0.1
Delay (s)				17.5	20.7			26.2			13.8	12.2
Level of Service				B	C			C			B	B
Approach Delay (s)		0.0			20.3			26.2			13.5	
Approach LOS		A			C			C			B	













### Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Unsignalized Intersection Capacity Analysis

## 21: Ward Ave & Hotel St

12/15/2014

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					  	
Volume (veh/h)	79	73	0	639	810	166
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	81	74	0	652	827	169
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				None	None	
Median storage (veh)						
Upstream signal (ft)						
				328	366	
pX, platoon unblocked	0.88	0.95	0.95			
vC, conflicting volume	1563	360	996			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1277	146	815			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	42	91	100			
cM capacity (veh/h)	139	832	769			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	SB 3
Volume Total	81	74	652	331	331	335
Volume Left	81	0	0	0	0	0
Volume Right	0	74	0	0	0	169
cSH	139	832	1700	1700	1700	1700
Volume to Capacity	0.58	0.09	0.38	0.19	0.19	0.20
Queue Length 95th (ft)	74	7	0	0	0	0
Control Delay (s)	62.0	9.8	0.0	0.0	0.0	0.0
Lane LOS	F	A				
Approach Delay (s)	36.9		0.0	0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			44.7%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Signalized Intersection Capacity Analysis

## 22: Ward Ave & King St

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<b>4EB</b>						<b>↑</b>	<b>↗</b>		<b>↑↑↑</b>	
Volume (vph)	257	2491	50	0	0	0	0	332	340	0	950	0
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		5.0	
Lane Util. Factor		0.76						1.00	1.00		0.91	
Frt		1.00						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		1.00	
Satd. Flow (prot)		8433						1863	1583		5085	
Flt Permitted		1.00						1.00	1.00		1.00	
Satd. Flow (perm)		8433						1863	1583		5085	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	268	2595	52	0	0	0	0	346	354	0	990	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	15	0	0	0
Lane Group Flow (vph)	0	2912	0	0	0	0	0	346	339	0	990	0
Turn Type	Perm	NA						NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4								2			
Actuated Green, G (s)		43.1						29.4	29.4		29.4	
Effective Green, g (s)		43.1						29.4	29.4		29.4	
Actuated g/C Ratio		0.52						0.36	0.36		0.36	
Clearance Time (s)		5.0						5.0	5.0		5.0	
Vehicle Extension (s)		3.0						3.0	3.0		3.0	
Lane Grp Cap (vph)		4405						663	564		1812	
v/s Ratio Prot								0.19			0.19	
v/s Ratio Perm		0.35							c0.21			
v/c Ratio		0.66						0.52	0.60		0.55	
Uniform Delay, d1		14.4						21.0	21.7		21.2	
Progression Factor		1.00						1.00	1.00		1.00	
Incremental Delay, d2		0.4						0.7	1.8		0.3	
Delay (s)		14.7						21.7	23.5		21.6	
Level of Service		B						C	C		C	
Approach Delay (s)		14.7			0.0			22.6			21.6	
Approach LOS		B			A			C			C	





















### Intersection Summary

HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 25: Ward Ave & Kapiolani Blvd

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1189	143	0	1042	144	156	628	251	249	728	136
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	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.86			0.95		1.00	0.95	1.00	1.00	0.95	
Frt		0.98			0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		6304			3475		1770	3539	1583	1770	3456	
Flt Permitted		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		6304			3475		1770	3539	1583	1770	3456	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1252	151	0	1097	152	164	661	264	262	766	143
RTOR Reduction (vph)	0	18	0	0	9	0	0	0	80	0	13	0
Lane Group Flow (vph)	0	1385	0	0	1240	0	164	661	184	262	896	0
Turn Type		NA			NA		Prot	NA	Perm	Prot	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)		44.4			44.4		13.3	29.0	29.0	20.1	35.8	
Effective Green, g (s)		44.4			44.4		13.3	29.0	29.0	20.1	35.8	
Actuated g/C Ratio		0.41			0.41		0.12	0.27	0.27	0.19	0.33	
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		2579			1422		216	945	423	327	1140	
v/s Ratio Prot		0.22			c0.36		0.09	0.19		c0.15	c0.26	
v/s Ratio Perm									0.12			
v/c Ratio		0.54			0.87		0.76	0.70	0.44	0.80	0.79	
Uniform Delay, d1		24.3			29.4		46.1	35.8	33.0	42.3	32.9	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			6.2		14.2	2.3	0.7	13.2	3.6	
Delay (s)		24.5			35.6		60.2	38.1	33.7	55.4	36.5	
Level of Service		C			D		E	D	C	E	D	
Approach Delay (s)		24.5			35.6			40.4			40.7	
Approach LOS		C			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.7				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			108.5				Sum of lost time (s)		15.0			
Intersection Capacity Utilization			79.0%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

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**APPENDIX E**  
**CAPACITY ANALYSIS CALCULATIONS**  
**ATKINSON DRIVE**

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# HCM Signalized Intersection Capacity Analysis

## 32: Atkinson Dr & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑↑		↑↑↑
Volume (vph)	553	70	928	1807	0	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0		5.0
Lane Util. Factor	0.95		0.86	0.86		0.76
Frbp, ped/bikes	0.99		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	0.98		1.00	1.00		0.85
Flt Protected	1.00		0.95	0.99		1.00
Satd. Flow (prot)	3459		1516	4754		3610
Flt Permitted	1.00		0.29	0.69		1.00
Satd. Flow (perm)	3459		465	3294		3610
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	582	74	977	1902	0	259
RTOR Reduction (vph)	6	0	0	0	0	0
Lane Group Flow (vph)	650	0	547	2332	0	259
Confl. Peds. (#/hr)		72	72			
Turn Type	NA		pm+pt	NA		pt+ov
Protected Phases	2		1 8	6		1 8
Permitted Phases			6			
Actuated Green, G (s)	28.6		62.8	62.8		29.2
Effective Green, g (s)	28.6		62.8	62.8		29.2
Actuated g/C Ratio	0.42		0.93	0.93		0.43
Clearance Time (s)	5.0			5.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1459		883	3679		1554
v/s Ratio Prot	0.19		0.27	c0.27		0.07
v/s Ratio Perm			0.31	c0.31		
v/c Ratio	0.45		0.62	0.63		0.17
Uniform Delay, d1	14.0		4.2	0.4		11.8
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2		1.3	0.4		0.1
Delay (s)	14.2		5.5	0.8		11.9
Level of Service	B		A	A		B
Approach Delay (s)	14.2			1.7	11.9	
Approach LOS	B			A	B	

### Intersection Summary

HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
 32: Atkinson Dr & Kapiolani Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1537	228	0	1088	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0		5.0
Lane Util. Factor	0.86			0.95		0.64
Frt	0.98			1.00		0.85
Flt Protected	1.00			1.00		1.00
Satd. Flow (prot)	6283			3539		4053
Flt Permitted	1.00			1.00		1.00
Satd. Flow (perm)	6283			3539		4053
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1568	233	0	1110	0	796
RTOR Reduction (vph)	22	0	0	0	0	0
Lane Group Flow (vph)	1779	0	0	1110	0	796
Turn Type	NA			NA		Prot
Protected Phases	2			6		8
Permitted Phases						
Actuated Green, G (s)	38.4			38.4		28.6
Effective Green, g (s)	38.4			38.4		28.6
Actuated g/C Ratio	0.50			0.50		0.37
Clearance Time (s)	5.0			5.0		5.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	3133			1764		1505
v/s Ratio Prot	0.28			c0.31		c0.20
v/s Ratio Perm						
v/c Ratio	0.57			0.63		0.53
Uniform Delay, d1	13.5			14.1		18.9
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.2			0.7		0.3
Delay (s)	13.7			14.8		19.3
Level of Service	B			B		B
Approach Delay (s)	13.7			14.8	19.3	
Approach LOS	B			B	B	

**Intersection Summary**

HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 38: Atkinson Dr & Kahakai Dr

12/15/2014















	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑↓		↘	↑↑
Volume (vph)	48	55	296	27	77	1194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Fit Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3495		1770	3539
Fit Permitted	0.95	1.00	1.00		0.55	1.00
Satd. Flow (perm)	1770	1583	3495		1023	3539
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	50	57	308	28	80	1244
RTOR Reduction (vph)	0	49	5	0	0	0
Lane Group Flow (vph)	50	8	331	0	80	1244
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	8.1	8.1	39.5		39.5	39.5
Effective Green, g (s)	8.1	8.1	39.5		39.5	39.5
Actuated g/C Ratio	0.14	0.14	0.69		0.69	0.69
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	248	222	2396		701	2426
v/s Ratio Prot	c0.03		0.09			c0.35
v/s Ratio Perm		0.01			0.08	
v/c Ratio	0.20	0.04	0.14		0.11	0.51
Uniform Delay, d <sub>1</sub>	21.9	21.4	3.1		3.1	4.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d <sub>2</sub>	0.4	0.1	0.0		0.1	0.2
Delay (s)	22.3	21.4	3.2		3.2	4.6
Level of Service	C	C	A		A	A
Approach Delay (s)	21.8		3.2			4.5
Approach LOS	C		A			A

**Intersection Summary**

HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 38: Atkinson Dr & Kahakai Dr














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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			  			 
Volume (vph)	157	89	726	9	26	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	5076		1770	3539
Flt Permitted	0.95	1.00	1.00		0.31	1.00
Satd. Flow (perm)	1770	1583	5076		569	3539
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	191	109	885	11	32	443
RTOR Reduction (vph)	0	66	2	0	0	0
Lane Group Flow (vph)	191	43	894	0	32	443
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	12.0	12.0	19.7		19.7	19.7
Effective Green, g (s)	12.0	12.0	19.7		19.7	19.7
Actuated g/C Ratio	0.29	0.29	0.47		0.47	0.47
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	509	455	2398		268	1671
v/s Ratio Prot	c0.11		c0.18			0.13
v/s Ratio Perm		0.03			0.06	
v/c Ratio	0.38	0.09	0.37		0.12	0.27
Uniform Delay, d1	11.9	10.9	7.0		6.2	6.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.1		0.2	0.1
Delay (s)	12.3	11.0	7.1		6.4	6.7
Level of Service	B	B	A		A	A
Approach Delay (s)	11.8		7.1			6.7
Approach LOS	B		A			A

Intersection Summary				
HCM 2000 Control Delay		7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0.37		
Actuated Cycle Length (s)		41.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		
c Critical Lane Group				















HCM Unsignalized Intersection Capacity Analysis  
 39: Atkinson Dr & Kona St

12/15/2014

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations				  	 		
Volume (veh/h)	0	66	119	317	1052	158	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	0	73	131	348	1156	174	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)				518	196		
pX, platoon unblocked	0.82	0.82	0.82				
vC, conflicting volume	1621	665	1330				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1322	159	968				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	90	78				
cM capacity (veh/h)	94	705	582				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	73	131	116	116	116	771	559
Volume Left	0	131	0	0	0	0	0
Volume Right	73	0	0	0	0	0	174
cSH	705	582	1700	1700	1700	1700	1700
Volume to Capacity	0.10	0.22	0.07	0.07	0.07	0.45	0.33
Queue Length 95th (ft)	9	21	0	0	0	0	0
Control Delay (s)	10.7	13.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B					
Approach Delay (s)	10.7	3.5				0.0	
Approach LOS	B						
Intersection Summary							
Average Delay			1.3				
Intersection Capacity Utilization			47.4%		ICU Level of Service		A
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
 39: Atkinson Dr & Kona St

12/15/2014

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations				  	  		
Volume (veh/h)	0	129	157	735	451	69	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	0	143	174	817	501	77	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)				518	196		
pX, platoon unblocked	0.95	0.95	0.95				
vC, conflicting volume	1161	289	578				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1057	137	442				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	83	83				
cM capacity (veh/h)	174	840	1055				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	143	174	272	272	272	334	244
Volume Left	0	174	0	0	0	0	0
Volume Right	143	0	0	0	0	0	77
cSH	840	1055	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.17	0.16	0.16	0.16	0.20	0.14
Queue Length 95th (ft)	15	15	0	0	0	0	0
Control Delay (s)	10.2	9.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	10.2	1.6				0.0	
Approach LOS	B						
Intersection Summary							
Average Delay			1.8				
Intersection Capacity Utilization			30.0%		ICU Level of Service		A
Analysis Period (min)			15				

HCM Signalized Intersection Capacity Analysis  
 40: Atkinson Dr & Mahukona St

12/15/2014
















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	YY		Y	↑↑	↑↓	
Volume (vph)	44	153	132	295	757	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Frt	0.88		1.00	1.00	0.97	
Fit Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	3158		1770	3539	3438	
Fit Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	3158		1770	3539	3438	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	163	140	314	805	190
RTOR Reduction (vph)	133	0	0	0	21	0
Lane Group Flow (vph)	77	0	140	314	974	0
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	11.9		8.7	43.0	29.3	
Effective Green, g (s)	11.9		8.7	43.0	29.3	
Actuated g/C Ratio	0.18		0.13	0.66	0.45	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	579		237	2344	1552	
v/s Ratio Prot	c0.02		c0.08	0.09	c0.28	
v/s Ratio Perm						
v/c Ratio	0.13		0.59	0.13	0.63	
Uniform Delay, d1	22.2		26.4	4.1	13.6	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		3.9	0.0	0.8	
Delay (s)	22.3		30.3	4.1	14.4	
Level of Service	C		C	A	B	
Approach Delay (s)	22.3			12.2	14.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 40: Atkinson Dr & Mahukona St
























12/15/2014

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	 			 	 	
Volume (vph)	322	338	237	489	248	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.95	
Fr <sub>t</sub>	0.92		1.00	1.00	0.97	
Fl <sub>t</sub> Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	3257		1770	3539	3430	
Fl <sub>t</sub> Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	3257		1770	3539	3430	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	335	352	247	509	258	67
RTOR Reduction (vph)	218	0	0	0	28	0
Lane Group Flow (vph)	469	0	247	509	297	0
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.5		14.4	36.2	16.8	
Effective Green, g (s)	15.5		14.4	36.2	16.8	
Actuated g/C Ratio	0.25		0.23	0.59	0.27	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	818		413	2076	933	
v/s Ratio Prot	c0.14		c0.14	0.14	c0.09	
v/s Ratio Perm						
v/c Ratio	0.57		0.60	0.25	0.32	
Uniform Delay, d <sub>1</sub>	20.2		21.1	6.2	17.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	1.0		2.3	0.1	0.2	
Delay (s)	21.2		23.4	6.2	18.1	
Level of Service	C		C	A	B	
Approach Delay (s)	21.2			11.8	18.1	
Approach LOS	C			B	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			16.6	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.49			
Actuated Cycle Length (s)			61.7	Sum of lost time (s)	15.0	
Intersection Capacity Utilization			54.4%	ICU Level of Service	A	
Analysis Period (min)			15			
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
 41: Ala Moana Blvd & Atkinson Dr

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	894	36	49	1174	133	76	65	36	150	108	562
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	0.85
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5056		1770	5085	1583	1770	1863	1583	3433	1588	1504
Fit Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5056		1770	5085	1583	1770	1863	1583	3433	1588	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	226	951	38	52	1249	141	81	69	38	160	115	598
RTOR Reduction (vph)	0	3	0	0	0	96	0	0	34	0	0	0
Lane Group Flow (vph)	226	986	0	52	1249	45	81	69	4	160	366	347
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	pt+ov
Protected Phases	5	2		1	6		3	3		4	4	4.5
Permitted Phases						6			3			
Actuated Green, G (s)	12.4	42.1		8.0	37.7	37.7	11.0	11.0	11.0	38.1	38.1	55.5
Effective Green, g (s)	12.4	42.1		8.0	37.7	37.7	11.0	11.0	11.0	38.1	38.1	55.5
Actuated g/C Ratio	0.10	0.35		0.07	0.32	0.32	0.09	0.09	0.09	0.32	0.32	0.47
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	357	1785		118	1608	500	163	171	146	1097	507	700
v/s Ratio Prot	c0.07	c0.19		0.03	c0.25		c0.05	0.04		0.05	c0.23	0.23
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.63	0.55		0.44	0.78	0.09	0.50	0.40	0.02	0.15	0.72	0.50
Uniform Delay, d1	51.2	31.0		53.4	36.9	28.7	51.5	51.0	49.2	28.9	35.9	22.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.4		2.6	2.4	0.1	2.4	1.6	0.1	0.1	5.0	0.6
Delay (s)	54.9	31.3		56.1	39.4	28.7	53.8	52.6	49.3	29.0	40.9	22.7
Level of Service	D	C		E	D	C	D	D	D	C	D	C
Approach Delay (s)		35.7			38.9			52.5			31.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
41: Ala Moana Blvd & Atkinson Dr

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	334	1460	86	72	1381	332	82	101	76	226	116	233
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Fr't	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	0.85
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5043		1770	5085	1583	1770	1863	1583	3433	1672	1504
Fit Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5043		1770	5085	1583	1770	1863	1583	3433	1672	1504
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	359	1570	92	77	1485	357	88	109	82	243	125	251
RTOR Reduction (vph)	0	5	0	0	0	216	0	0	74	0	0	0
Lane Group Flow (vph)	359	1657	0	77	1485	141	88	109	8	243	198	178
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	pt+ov
Protected Phases	5	2		1	6		3	3		4	4	4 5
Permitted Phases						6			3			
Actuated Green, G (s)	17.8	54.7		10.2	47.1	47.1	12.9	12.9	12.9	33.2	33.2	56.0
Effective Green, g (s)	17.8	54.7		10.2	47.1	47.1	12.9	12.9	12.9	33.2	33.2	56.0
Actuated g/C Ratio	0.14	0.42		0.08	0.36	0.36	0.10	0.10	0.10	0.25	0.25	0.43
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	466	2105		137	1828	569	174	183	155	870	423	642
v/s Ratio Prot	c0.10	c0.33		0.04	0.29		0.05	c0.06		0.07	c0.12	0.12
v/s Ratio Perm						0.09			0.01			
v/c Ratio	0.77	0.79		0.56	0.81	0.25	0.51	0.60	0.05	0.28	0.47	0.28
Uniform Delay, d1	54.6	33.1		58.2	38.0	29.5	56.0	56.6	53.5	39.3	41.4	24.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.7	2.0		5.2	2.9	0.2	2.3	5.1	0.1	0.2	0.8	0.2
Delay (s)	62.3	35.1		63.4	40.8	29.7	58.3	61.7	53.7	39.5	42.2	24.6
Level of Service	E	D		E	D	C	E	E	D	D	D	C
Approach Delay (s)		40.0			39.7			58.3			36.1	
Approach LOS		D			D			E			D	

Intersection Summary

HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	131.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 38: Atkinson Dr & Kahakai Dr












12/15/2014

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑↑			↓↓↓
Volume (vph)	48	55	296	27	77	1194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			0.91
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1583	3495			5070
Flt Permitted	0.95	1.00	1.00			0.89
Satd. Flow (perm)	1770	1583	3495			4541
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	50	57	308	28	80	1244
RTOR Reduction (vph)	0	49	6	0	0	0
Lane Group Flow (vph)	50	8	330	0	0	1324
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	8.1	8.1	36.7			36.7
Effective Green, g (s)	8.1	8.1	36.7			36.7
Actuated g/C Ratio	0.15	0.15	0.67			0.67
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	261	233	2340			3041
v/s Ratio Prot	c0.03		0.09			
v/s Ratio Perm		0.01				c0.29
v/c Ratio	0.19	0.04	0.14			0.44
Uniform Delay, d1	20.5	20.0	3.3			4.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.1	0.0			0.1
Delay (s)	20.8	20.1	3.3			4.3
Level of Service	C	C	A			A
Approach Delay (s)	20.4		3.3			4.3
Approach LOS	C		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			5.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.39			
Actuated Cycle Length (s)			54.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			49.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Unsignalized Intersection Capacity Analysis

## 39: Atkinson Dr & Kona St

12/15/2014

							
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Volume (veh/h)	0	66	0	317	1052	158	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	0	73	0	348	1156	174	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage (veh)							
Upstream signal (ft)				518	196		
pX, platoon unblocked	0.89	0.89	0.89				
vC, conflicting volume	1417	472	1330				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1047	0	949				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	93	100				
cM capacity (veh/h)	200	968	642				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	73	0	174	174	462	462	405
Volume Left	0	0	0	0	0	0	0
Volume Right	73	0	0	0	0	0	174
cSH	968	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.00	0.10	0.10	0.27	0.27	0.24
Queue Length 95th (ft)	6	0	0	0	0	0	0
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.0	0.0			0.0		
Approach LOS	A						
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			34.6%		ICU Level of Service		A
Analysis Period (min)			15				

# HCM Signalized Intersection Capacity Analysis

## 40: Atkinson Dr & Mahukona St

12/15/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙↘		↙	↕	↕↕↘	
Volume (vph)	44	153	251	176	757	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	0.95	0.91	
Frt	0.88		1.00	1.00	0.97	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	3158		1770	3539	4940	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	3158		1770	3539	4940	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	163	267	187	805	190
RTOR Reduction (vph)	133	0	0	0	44	0
Lane Group Flow (vph)	77	0	267	187	951	0
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	11.9		14.9	42.4	22.5	
Effective Green, g (s)	11.9		14.9	42.4	22.5	
Actuated g/C Ratio	0.19		0.23	0.66	0.35	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	584		410	2333	1728	
v/s Ratio Prot	c0.02		c0.15	0.05	c0.19	
v/s Ratio Perm						
v/c Ratio	0.13		0.65	0.08	0.55	
Uniform Delay, d1	21.9		22.3	3.9	16.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		3.7	0.0	0.4	
Delay (s)	22.0		26.0	4.0	17.2	
Level of Service	C		C	A	B	
Approach Delay (s)	22.0			16.9	17.2	
Approach LOS	C			B	B	

### Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 41: Ala Moana Blvd & Atkinson Dr

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	894	36	49	1174	133	76	65	36	150	108	562
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5056		1770	5085	1583	1770	1863	1583	3433	1588	1504
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5056		1770	5085	1583	1770	1863	1583	3433	1588	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	226	951	38	52	1249	141	81	69	38	160	115	598
RTOR Reduction (vph)	0	3	0	0	0	96	0	0	34	0	0	0
Lane Group Flow (vph)	226	986	0	52	1249	45	81	69	4	160	366	347
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	pt+ov
Protected Phases	5	2		1	6		3	3		4	4	4 5
Permitted Phases						6			3			
Actuated Green, G (s)	12.4	42.1		8.0	37.7	37.7	11.0	11.0	11.0	38.1	38.1	55.5
Effective Green, g (s)	12.4	42.1		8.0	37.7	37.7	11.0	11.0	11.0	38.1	38.1	55.5
Actuated g/C Ratio	0.10	0.35		0.07	0.32	0.32	0.09	0.09	0.09	0.32	0.32	0.47
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	357	1785		118	1608	500	163	171	146	1097	507	700
v/s Ratio Prot	c0.07	c0.19		0.03	c0.25		c0.05	0.04		0.05	c0.23	0.23
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.63	0.55		0.44	0.78	0.09	0.50	0.40	0.02	0.15	0.72	0.50
Uniform Delay, d1	51.2	31.0		53.4	36.9	28.7	51.5	51.0	49.2	28.9	35.9	22.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.4		2.6	2.4	0.1	2.4	1.6	0.1	0.1	5.0	0.6
Delay (s)	54.9	31.3		56.1	39.4	28.7	53.8	52.6	49.3	29.0	40.9	22.7
Level of Service	D	C		E	D	C	D	D	D	C	D	C
Approach Delay (s)		35.7			38.9			52.5			31.5	
Approach LOS		D			D			D			C	

### Intersection Summary

HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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**APPENDIX F**  
**CAPACITY ANALYSIS CALCULATIONS**  
**DILLINGHAM BOULEVARD**

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# HCM Signalized Intersection Capacity Analysis

## 5: H-1 Fwy/Kamehameha Hwy & Middle St

12/15/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↕↕	↕↕↕	↗	↔↔	↗↗
Volume (vph)	253	2129	466	135	397	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.86	1.00	0.97	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	6408	1583	3433	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	6408	1583	3433	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	264	2218	485	141	414	223
RTOR Reduction (vph)	0	0	0	116	0	0
Lane Group Flow (vph)	264	2218	485	25	414	223
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases				6		
Actuated Green, G (s)	65.2	91.5	21.3	21.3	20.4	90.6
Effective Green, g (s)	65.2	91.5	21.3	21.3	20.4	90.6
Actuated g/C Ratio	0.53	0.75	0.17	0.17	0.17	0.74
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1836	2656	1119	276	574	2071
v/s Ratio Prot	0.08	c0.63	0.08		c0.12	0.08
v/s Ratio Perm				0.02		
v/c Ratio	0.14	0.84	0.43	0.09	0.72	0.11
Uniform Delay, d1	14.3	10.2	44.9	42.2	48.1	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.4	0.3	0.1	4.5	0.0
Delay (s)	14.3	12.6	45.2	42.3	52.5	4.4
Level of Service	B	B	D	D	D	A
Approach Delay (s)		12.8	44.5		35.7	
Approach LOS		B	D		D	

### Intersection Summary

HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 5: H-1 Fwy #1/Kamehameha Hwy #1 & Middle St

12/15/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↕↕	↕↕↕	↗	↖↖	↗↗
Volume (vph)	128	1224	1050	281	298	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.97	0.95	0.86	1.00	0.97	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	6408	1583	3433	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	6408	1583	3433	2787
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	156	1493	1280	343	363	638
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	156	1493	1280	343	363	638
Turn Type	Prot	NA	NA	Free	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases				Free		
Actuated Green, G (s)	16.8	55.0	33.2	80.6	15.6	37.4
Effective Green, g (s)	16.8	55.0	33.2	80.6	15.6	37.4
Actuated g/C Ratio	0.21	0.68	0.41	1.00	0.19	0.46
Clearance Time (s)	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	715	2414	2639	1583	664	1293
v/s Ratio Prot	0.05	c0.42	0.20		0.11	c0.23
v/s Ratio Perm				0.22		
v/c Ratio	0.22	0.62	0.49	0.22	0.55	0.49
Uniform Delay, d1	26.5	7.0	17.4	0.0	29.3	15.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.1	0.3	0.9	0.3
Delay (s)	26.6	7.5	17.6	0.3	30.2	15.3
Level of Service	C	A	B	A	C	B
Approach Delay (s)		9.3	13.9		20.7	
Approach LOS		A	B		C	

Intersection Summary

HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: OCCC Dwy/Laumaka St & Kamehameha Hwy /Kamehameha Hwy #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	2178	17	14	673	85	1	5	7	43	1	13
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	5.0			5.0			5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99			0.98			1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			0.98	1.00
Frt	1.00	1.00		1.00	0.98			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	1.00
Satd. Flow (prot)	1747	5078		1769	3457			1689			1738	1583
Flt Permitted	0.35	1.00		0.06	1.00			0.98			0.72	1.00
Satd. Flow (perm)	641	5078		107	3457			1662			1315	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	79	2269	18	15	701	89	1	5	7	45	1	14
RTOR Reduction (vph)	0	0	0	0	5	0	0	6	0	0	0	13
Lane Group Flow (vph)	79	2287	0	15	785	0	0	7	0	0	46	1
Confl. Peds. (#/hr)	25		1	1		25			24	24		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		4			4
Actuated Green, G (s)	70.9	70.9		70.9	70.9			9.5			9.5	9.5
Effective Green, g (s)	70.9	70.9		70.9	70.9			9.5			9.5	9.5
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.11			0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	502	3982		83	2711			174			138	166
v/s Ratio Prot		c0.45			0.23							
v/s Ratio Perm	0.12			0.14				0.00			c0.03	0.00
v/c Ratio	0.16	0.57		0.18	0.29			0.04			0.33	0.01
Uniform Delay, d1	2.4	3.8		2.5	2.7			36.3			37.5	36.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.2		1.0	0.1			0.1			1.4	0.0
Delay (s)	2.5	4.0		3.5	2.8			36.4			38.9	36.3
Level of Service	A	A		A	A			D			D	D
Approach Delay (s)		4.0			2.8			36.4			38.3	
Approach LOS		A			A			D			D	

### Intersection Summary

HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 6: OCCC Dwy/Laumaka St & Kamehameha Hwy #1/Dillingham Blvd #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	1593	5	18	1173	148	4	1	19	47	3	34
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	5.0			5.0			5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99			0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	1.00
Frt	1.00	1.00		1.00	0.98			0.89			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1764	5082		1769	3461			1618			1762	1583
Flt Permitted	0.15	1.00		0.11	1.00			0.95			0.72	1.00
Satd. Flow (perm)	287	5082		205	3461			1555			1326	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	122	1770	6	20	1303	164	4	1	21	52	3	38
RTOR Reduction (vph)	0	0	0	0	5	0	0	19	0	0	0	34
Lane Group Flow (vph)	122	1776	0	20	1462	0	0	7	0	0	55	4
Confl. Peds. (#/hr)	19		2	2		19			11	11		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	71.0	71.0		71.0	71.0			9.8			9.8	9.8
Effective Green, g (s)	71.0	71.0		71.0	71.0			9.8			9.8	9.8
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.11			0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	224	3973		160	2706			167			143	170
v/s Ratio Prot		0.35			0.42							
v/s Ratio Perm	c0.43			0.10				0.00			c0.04	0.00
v/c Ratio	0.54	0.45		0.12	0.54			0.04			0.38	0.02
Uniform Delay, d1	3.8	3.3		2.4	3.7			36.3			37.7	36.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	2.7	0.1		0.4	0.2			0.1			1.7	0.1
Delay (s)	6.5	3.4		2.7	4.0			36.4			39.4	36.3
Level of Service	A	A		A	A			D			D	D
Approach Delay (s)		3.6			3.9			36.4			38.1	
Approach LOS		A			A			D			D	

### Intersection Summary














HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Puuhale Rd & Kamehameha Hwy #1/Dillingham Blvd #1

12/15/2014













													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↗	↘	↑↑		↘		↗	↘	↗		
Volume (vph)	0	1473	771	39	573	0	151	0	40	20	80	63	
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	5.0		5.0		5.0	5.0	5.0		
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00		
Frbp, ped/bikes		1.00	0.96	1.00	1.00		1.00		0.93	1.00	0.96		
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.97		1.00	0.92	1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.93		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00		
Satd. Flow (prot)		3539	1516	1765	3539		1718		1468	1631	1676		
Flt Permitted		1.00	1.00	0.12	1.00		0.61		1.00	0.95	1.00		
Satd. Flow (perm)		3539	1516	229	3539		1108		1468	1631	1676		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	1503	787	40	585	0	154	0	41	20	82	64	
RTOR Reduction (vph)	0	0	126	0	0	0	0	0	32	0	25	0	
Lane Group Flow (vph)	0	1503	661	40	585	0	154	0	9	20	121	0	
Confl. Peds. (#/hr)	23		32	32		23	30		64	64		60	
Turn Type		NA	Perm	Perm	NA		Perm		Perm	Perm	NA		
Protected Phases		2			6							4	
Permitted Phases			2	6			8		8	4			
Actuated Green, G (s)		64.0	64.0	64.0	64.0		19.8		19.8	19.8	19.8		
Effective Green, g (s)		64.0	64.0	64.0	64.0		19.8		19.8	19.8	19.8		
Actuated g/C Ratio		0.68	0.68	0.68	0.68		0.21		0.21	0.21	0.21		
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)		2414	1034	156	2414		233		309	344	353		
v/s Ratio Prot		0.42			0.17							0.07	
v/s Ratio Perm			c0.44	0.17			c0.14		0.01	0.01			
v/c Ratio		0.62	0.64	0.26	0.24		0.66		0.03	0.06	0.34		
Uniform Delay, d1		8.2	8.4	5.7	5.7		33.9		29.4	29.6	31.5		
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00		
Incremental Delay, d2		0.5	1.3	0.9	0.1		6.9		0.0	0.1	0.6		
Delay (s)		8.7	9.7	6.6	5.7		40.8		29.4	29.6	32.0		
Level of Service		A	A	A	A		D		C	C	C		
Approach Delay (s)		9.1			5.8			38.4			31.8		
Approach LOS		A			A			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.3				HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			93.8				Sum of lost time (s)			10.0			
Intersection Capacity Utilization			84.4%				ICU Level of Service			E			
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Puuhale Rd & Dillingham Blvd #1

12/15/2014





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑		↑		↑	↑	↑	↑
Volume (vph)	0	1302	334	31	1023	0	248	0	81	41	51	66
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	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00	
Frbp, ped/bikes		1.00	0.98	1.00	1.00		1.00		0.94	1.00	0.96	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.96		1.00	0.93	1.00	
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.92	
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3539	1554	1769	3539		1693		1481	1649	1644	
Flt Permitted		1.00	1.00	0.09	1.00		0.67		1.00	0.95	1.00	
Satd. Flow (perm)		3539	1554	177	3539		1193		1481	1649	1644	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	1480	380	35	1162	0	282	0	92	47	58	75
RTOR Reduction (vph)	0	0	151	0	0	0	0	0	19	0	38	0
Lane Group Flow (vph)	0	1480	229	35	1162	0	282	0	73	47	95	0
Confl. Peds. (#/hr)	31		7	7		31	43		56	56		43
Turn Type		NA	Perm	Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		2			6							4
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		53.9	53.9	53.9	53.9		29.3		29.3	29.3	29.3	
Effective Green, g (s)		53.9	53.9	53.9	53.9		29.3		29.3	29.3	29.3	
Actuated g/C Ratio		0.58	0.58	0.58	0.58		0.31		0.31	0.31	0.31	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		2046	898	102	2046		375		465	518	516	
v/s Ratio Prot		c0.42			0.33							0.06
v/s Ratio Perm			0.15	0.20			c0.24		0.05	0.03		
v/c Ratio		0.72	0.26	0.34	0.57		0.75		0.16	0.09	0.18	
Uniform Delay, d1		14.2	9.7	10.3	12.3		28.7		23.1	22.5	23.3	
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		1.3	0.2	2.0	0.4		8.3		0.2	0.1	0.2	
Delay (s)		15.5	9.9	12.4	12.7		37.0		23.2	22.6	23.4	
Level of Service		B	A	B	B		D		C	C	C	
Approach Delay (s)		14.4			12.7			33.6			23.2	
Approach LOS		B			B			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			93.2			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			73.7%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
8: Mokauea St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1443	25	15	471	31	58	71	46	62	106	54
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	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	0.96
Flpb, ped/bikes	0.97	1.00		1.00	1.00			0.99	1.00		0.99	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.98	1.00
Satd. Flow (prot)	1724	3527		1766	3491			1805	1499		1805	1523
Flt Permitted	0.46	1.00		0.11	1.00			0.79	1.00		0.83	1.00
Satd. Flow (perm)	832	3527		197	3491			1461	1499		1530	1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1503	26	16	491	32	60	74	48	65	110	56
RTOR Reduction (vph)	0	1	0	0	4	0	0	0	33	0	0	30
Lane Group Flow (vph)	68	1528	0	16	519	0	0	134	15	0	175	26
Confl. Peds. (#/hr)	32		17	17		32	32		52	52		32
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	43.9	43.9		43.9	43.9			16.3	16.3		16.3	16.3
Effective Green, g (s)	43.9	43.9		43.9	43.9			16.3	16.3		16.3	16.3
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.23	0.23		0.23	0.23
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	520	2205		123	2183			339	348		355	353
v/s Ratio Prot		c0.43			0.15							
v/s Ratio Perm	0.08			0.08				0.09	0.01		c0.11	0.02
v/c Ratio	0.13	0.69		0.13	0.24			0.40	0.04		0.49	0.07
Uniform Delay, d1	5.4	8.7		5.4	5.8			22.8	20.9		23.4	21.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	1.0		0.5	0.1			0.8	0.1		1.1	0.1
Delay (s)	5.5	9.7		5.8	5.8			23.5	21.0		24.4	21.1
Level of Service	A	A		A	A			C	C		C	C
Approach Delay (s)		9.5			5.8			22.9			23.6	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 8: Mokauea St & Dillingham Blvd #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	1275	34	21	919	85	63	215	72	51	98	43
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	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frb, ped/bikes	1.00	1.00		1.00	0.99			1.00	0.90		1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00			0.99	1.00		0.98	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.98	1.00
Satd. Flow (prot)	1753	3520		1764	3473			1832	1420		1797	1521
Flt Permitted	0.20	1.00		0.11	1.00			0.89	1.00		0.74	1.00
Satd. Flow (perm)	377	3520		210	3473			1648	1420		1353	1521
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	1371	37	23	988	91	68	231	77	55	105	46
RTOR Reduction (vph)	0	2	0	0	6	0	0	0	24	0	0	26
Lane Group Flow (vph)	114	1406	0	23	1073	0	0	299	53	0	160	20
Confl. Peds. (#/hr)	30		22	22		30	31		107	107		31
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	43.3	43.3		43.3	43.3			22.3	22.3		22.3	22.3
Effective Green, g (s)	43.3	43.3		43.3	43.3			22.3	22.3		22.3	22.3
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.29	0.29		0.29	0.29
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	215	2016		120	1989			486	418		399	448
v/s Ratio Prot		c0.40			0.31							
v/s Ratio Perm	0.30			0.11				c0.18	0.04		0.12	0.01
v/c Ratio	0.53	0.70		0.19	0.54			0.62	0.13		0.40	0.04
Uniform Delay, d1	9.9	11.5		7.8	10.0			23.0	19.5		21.3	19.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	1.1		0.8	0.3			2.3	0.1		0.7	0.0
Delay (s)	12.4	12.6		8.5	10.3			25.3	19.7		22.0	19.1
Level of Service	B	B		A	B			C	B		C	B
Approach Delay (s)		12.6			10.2			24.1			21.3	
Approach LOS		B			B			C			C	

### Intersection Summary




















HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Kalihi St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	1489	60	147	468	87	17	257	29	52	332	34
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	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	3511		1770	3456			3472			3465	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.80	
Satd. Flow (perm)	1770	3511		1770	3456			3138			2779	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	97	1584	64	156	498	93	18	273	31	55	353	36
RTOR Reduction (vph)	0	2	0	0	12	0	0	7	0	0	6	0
Lane Group Flow (vph)	97	1646	0	156	579	0	0	315	0	0	438	0
Confl. Peds. (#/hr)			30				17		1	1		17
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	10.7	58.5		13.0	60.8			21.9			21.9	
Effective Green, g (s)	10.7	58.5		13.0	60.8			21.9			21.9	
Actuated g/C Ratio	0.10	0.54		0.12	0.56			0.20			0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	174	1894		212	1938			633			561	
v/s Ratio Prot	0.05	c0.47		c0.09	0.17							
v/s Ratio Perm								0.10			c0.16	
v/c Ratio	0.56	0.87		0.74	0.30			0.50			0.78	
Uniform Delay, d1	46.6	21.6		46.0	12.6			38.4			41.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.8	4.5		12.5	0.1			0.6			7.0	
Delay (s)	50.4	26.2		58.5	12.6			39.0			48.0	
Level of Service	D	C		E	B			D			D	
Approach Delay (s)		27.5			22.2			39.0			48.0	
Approach LOS		C			C			D			D	

### Intersection Summary



















HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Kalihi St & Dillingham Blvd #1

12/15/2014

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	180	1258	42	58	910	170	54	537	22	46	232	45		
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	5.0			5.0			5.0			
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95			
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Frt	1.00	1.00		1.00	0.98			0.99			0.98			
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99			
Satd. Flow (prot)	1770	3519		1770	3446			3502			3432			
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.70			
Satd. Flow (perm)	1770	3519		1770	3446			3087			2417			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Adj. Flow (vph)	191	1338	45	62	968	181	57	571	23	49	247	48		
RTOR Reduction (vph)	0	2	0	0	13	0	0	2	0	0	11	0		
Lane Group Flow (vph)	191	1381	0	62	1136	0	0	649	0	0	333	0		
Confl. Peds. (#/hr)			10			5	5		2	2		5		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA			
Protected Phases	5	2		1	6			8				4		
Permitted Phases							8			4				
Actuated Green, G (s)	15.8	48.6		8.1	40.9			28.1				28.1		
Effective Green, g (s)	15.8	48.6		8.1	40.9			28.1				28.1		
Actuated g/C Ratio	0.16	0.49		0.08	0.41			0.28				0.28		
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0				5.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0				3.0		
Lane Grp Cap (vph)	280	1713		143	1412			869				680		
v/s Ratio Prot	c0.11	c0.39		0.04	0.33									
v/s Ratio Perm								c0.21				0.14		
v/c Ratio	0.68	0.81		0.43	0.80			0.75				0.49		
Uniform Delay, d1	39.6	21.6		43.7	25.9			32.6				29.9		
Progression Factor	1.00	1.00		1.00	1.00			1.00				1.00		
Incremental Delay, d2	6.7	2.9		2.1	3.4			3.5				0.6		
Delay (s)	46.3	24.5		45.8	29.4			36.1				30.4		
Level of Service	D	C		D	C			D				C		
Approach Delay (s)		27.1			30.2			36.1				30.4		
Approach LOS		C			C			D				C		
<b>Intersection Summary</b>														
HCM 2000 Control Delay			30.0									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.79											
Actuated Cycle Length (s)			99.8								15.0			
Intersection Capacity Utilization			85.7%										ICU Level of Service	E
Analysis Period (min)			15											

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 10: McNeill St & Dillingham Blvd #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1478	56	13	638	9	48	25	49	26	34	153
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	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.94		1.00	0.96
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.98	1.00		0.98	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00
Satd. Flow (prot)	1728	3514		1767	3528			1767	1484		1786	1512
Fit Permitted	0.39	1.00		0.11	1.00			0.78	1.00		0.86	1.00
Satd. Flow (perm)	707	3514		198	3528			1420	1484		1565	1512
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	39	1540	58	14	665	9	50	26	51	27	35	159
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	39	0	0	129
Lane Group Flow (vph)	39	1596	0	14	673	0	0	76	12	0	62	30
Confl. Peds. (#/hr)	37		15	15		37	41		61	61		41
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	49.7	49.7		49.7	49.7			13.9	13.9		13.9	13.9
Effective Green, g (s)	49.7	49.7		49.7	49.7			13.9	13.9		13.9	13.9
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19	0.19		0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	477	2372		133	2382			268	280		295	285
v/s Ratio Prot		c0.45			0.19							
v/s Ratio Perm	0.06			0.07				c0.05	0.01		0.04	0.02
v/c Ratio	0.08	0.67		0.11	0.28			0.28	0.04		0.21	0.11
Uniform Delay, d1	4.1	7.1		4.2	4.8			25.6	24.4		25.2	24.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.8		0.3	0.1			0.6	0.1		0.4	0.2
Delay (s)	4.2	7.9		4.5	4.9			26.2	24.5		25.6	24.9
Level of Service	A	A		A	A			C	C		C	C
Approach Delay (s)		7.8			4.9			25.5			25.1	
Approach LOS		A			A			C			C	

### Intersection Summary

HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	73.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 10: McNeill St & Dillingham Blvd #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	1149	98	33	990	20	152	43	34	15	43	128
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	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.92		1.00	0.96
Fipb, ped/bikes	0.99	1.00		1.00	1.00			0.98	1.00		0.99	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	1.00
Satd. Flow (prot)	1756	3483		1763	3524			1763	1454		1815	1528
Flt Permitted	0.20	1.00		0.13	1.00			0.73	1.00		0.91	1.00
Satd. Flow (perm)	372	3483		236	3524			1341	1454		1671	1528
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	1235	105	35	1065	22	163	46	37	16	46	138
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	17	0	0	61
Lane Group Flow (vph)	81	1334	0	35	1086	0	0	209	20	0	62	77
Confl. Peds. (#/hr)	29		24	24		29	31		90	90		31
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	38.2	38.2		38.2	38.2			20.0	20.0		20.0	20.0
Effective Green, g (s)	38.2	38.2		38.2	38.2			20.0	20.0		20.0	20.0
Actuated g/C Ratio	0.56	0.56		0.56	0.56			0.29	0.29		0.29	0.29
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	208	1950		132	1973			393	426		490	448
v/s Ratio Prot		c0.38			0.31							
v/s Ratio Perm	0.22			0.15				c0.16	0.01		0.04	0.05
v/c Ratio	0.39	0.68		0.27	0.55			0.53	0.05		0.13	0.17
Uniform Delay, d1	8.4	10.7		7.7	9.5			20.2	17.3		17.7	17.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	1.0		1.1	0.3			1.4	0.0		0.1	0.2
Delay (s)	9.6	11.7		8.8	9.9			21.6	17.3		17.8	18.1
Level of Service	A	B		A	A			C	B		B	B
Approach Delay (s)		11.6			9.8			20.9			18.0	
Approach LOS		B			A			C			B	

### Intersection Summary
























HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Waiakamilo Rd & Dillingham Blvd #1

12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	204	1279	88	53	519	55	15	226	30	87	426	139	
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	5.0		5.0	5.0	5.0	5.0	5.0		
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	1.00	1.00		
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3502		1770	3468		1770	3539	1562	1770	3394		
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1770	3502		1770	3468		1770	3539	1562	1770	3394		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	208	1305	90	54	530	56	15	231	31	89	435	142	
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	25	0	27	0	
Lane Group Flow (vph)	208	1391	0	54	580	0	15	231	6	89	550	0	
Confl. Peds. (#/hr)	51		1	1		51	6		1	1		6	
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases									8				
Actuated Green, G (s)	17.1	46.4		5.1	34.4		1.3	18.4	18.4	7.8	24.9		
Effective Green, g (s)	17.1	46.4		5.1	34.4		1.3	18.4	18.4	7.8	24.9		
Actuated g/C Ratio	0.18	0.47		0.05	0.35		0.01	0.19	0.19	0.08	0.25		
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	309	1663		92	1221		23	666	294	141	865		
v/s Ratio Prot	c0.12	c0.40		0.03	0.17		0.01	0.07		c0.05	c0.16		
v/s Ratio Perm									0.00				
v/c Ratio	0.67	0.84		0.59	0.47		0.65	0.35	0.02	0.63	0.64		
Uniform Delay, d1	37.7	22.3		45.3	24.6		48.0	34.4	32.3	43.6	32.4		
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	5.7	3.8		9.2	0.3		50.9	0.3	0.0	8.9	1.5		
Delay (s)	43.4	26.2		54.5	24.9		98.9	34.7	32.3	52.4	33.9		
Level of Service	D	C		D	C		F	C	C	D	C		
Approach Delay (s)		28.4			27.4			38.0				36.4	
Approach LOS		C			C			D				D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			30.7				HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			97.7				Sum of lost time (s)				20.0		
Intersection Capacity Utilization			79.9%				ICU Level of Service				D		
Analysis Period (min)			15										

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 11: Waiakamilo Rd & Dillingham Blvd #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	831	72	117	854	158	23	434	108	98	386	154
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	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3487		1770	3404		1770	3539	1562	1770	3314	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3487		1770	3404		1770	3539	1562	1770	3314	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	130	866	75	122	890	165	24	452	112	102	402	160
RTOR Reduction (vph)	0	6	0	0	13	0	0	0	88	0	36	0
Lane Group Flow (vph)	130	935	0	122	1042	0	24	452	24	102	526	0
Confl. Peds. (#/hr)	85		27	27		85	72		1	1		72
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	12.4	39.1		12.1	38.8		2.6	22.1	22.1	8.5	28.0	
Effective Green, g (s)	12.4	39.1		12.1	38.8		2.6	22.1	22.1	8.5	28.0	
Actuated g/C Ratio	0.12	0.38		0.12	0.38		0.03	0.22	0.22	0.08	0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	215	1339		210	1297		45	768	339	147	911	
v/s Ratio Prot	c0.07	0.27		0.07	c0.31		0.01	0.13		c0.06	c0.16	
v/s Ratio Perm									0.02			
v/c Ratio	0.60	0.70		0.58	0.80		0.53	0.59	0.07	0.69	0.58	
Uniform Delay, d1	42.4	26.4		42.5	28.1		49.0	35.8	31.7	45.4	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.7	1.6		4.0	3.7		11.6	1.2	0.1	13.3	0.9	
Delay (s)	47.1	28.0		46.5	31.8		60.6	36.9	31.8	58.7	32.7	
Level of Service	D	C		D	C		E	D	C	E	C	
Approach Delay (s)		30.3			33.3			36.9			36.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 12: Kohou St & Dillingham Blvd #1/Dillingham Blvd

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑			↑	↗		↑	↗
Volume (vph)	61	1200	50	84	493	54	28	53	85	35	97	51
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			5.0	5.0		5.0	5.0
Lane Util. Factor		0.91		1.00	0.95			1.00	1.00		1.00	1.00
Frbp, ped/bikes		1.00		1.00	0.99			1.00	1.00		1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00		1.00	1.00
Frt		0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected		1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)		5031		1763	3467			1811	1583		1838	1506
Flt Permitted		0.89		0.17	1.00			0.86	1.00		0.90	1.00
Satd. Flow (perm)		4480		314	3467			1586	1583		1673	1506
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	1237	52	87	508	56	29	55	88	36	100	53
RTOR Reduction (vph)	0	5	0	0	7	0	0	0	67	0	0	41
Lane Group Flow (vph)	0	1347	0	87	557	0	0	84	21	0	136	12
Confl. Peds. (#/hr)	32		23	23		32	55					55
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2			6			8				4
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)		29.1		29.1	29.1			11.4	11.4		11.4	11.4
Effective Green, g (s)		29.1		29.1	29.1			11.4	11.4		11.4	11.4
Actuated g/C Ratio		0.58		0.58	0.58			0.23	0.23		0.23	0.23
Clearance Time (s)		5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2581		180	1997			358	357		377	339
v/s Ratio Prot					0.16							
v/s Ratio Perm		c0.30		0.28				0.05	0.01		c0.08	0.01
v/c Ratio		0.52		0.48	0.28			0.23	0.06		0.36	0.04
Uniform Delay, d1		6.5		6.3	5.4			16.0	15.3		16.5	15.3
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2		2.0	0.1			0.3	0.1		0.6	0.0
Delay (s)		6.7		8.3	5.5			16.3	15.4		17.1	15.3
Level of Service		A		A	A			B	B		B	B
Approach Delay (s)		6.7			5.9			15.9			16.6	
Approach LOS		A			A			B			B	













Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Kohou St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔		↔	↔↔			↔	↔		↔	↔
Volume (vph)	63	1053	46	103	917	118	61	114	120	84	103	72
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			5.0	5.0		5.0	5.0
Lane Util. Factor		0.91		1.00	0.95			1.00	1.00		1.00	1.00
Frbp, ped/bikes		1.00		1.00	0.99			1.00	0.98		1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00			0.99	1.00		1.00	1.00
Frt		0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected		1.00		0.95	1.00			0.98	1.00		0.98	1.00
Satd. Flow (prot)		5026		1768	3453			1813	1558		1820	1503
Flt Permitted		0.82		0.15	1.00			0.77	1.00		0.71	1.00
Satd. Flow (perm)		4107		273	3453			1413	1558		1315	1503
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	66	1108	48	108	965	124	64	120	126	88	108	76
RTOR Reduction (vph)	0	4	0	0	7	0	0	0	50	0	0	50
Lane Group Flow (vph)	0	1218	0	108	1082	0	0	184	76	0	196	26
Confl. Peds. (#/hr)	28		30	30		28	41		3	3		41
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)		33.0		44.9	44.9			15.5	15.5		15.5	15.5
Effective Green, g (s)		33.0		44.9	44.9			15.5	15.5		15.5	15.5
Actuated g/C Ratio		0.47		0.64	0.64			0.22	0.22		0.22	0.22
Clearance Time (s)		5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1925		320	2202			311	343		289	330
v/s Ratio Prot				0.03	c0.31							
v/s Ratio Perm		c0.30		0.18				0.13	0.05		c0.15	0.02
v/c Ratio		0.63		0.34	0.49			0.59	0.22		0.68	0.08
Uniform Delay, d1		14.1		6.4	6.7			24.6	22.5		25.2	21.8
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7		0.6	0.2			3.0	0.3		6.2	0.1
Delay (s)		14.8		7.0	6.9			27.6	22.8		31.4	21.9
Level of Service		B		A	A			C	C		C	C
Approach Delay (s)		14.8			6.9			25.7			28.7	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 13: Kokea St & Dillingham Blvd

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	1114	26	10	625	130	23	9	6	120	15	37
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			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95			0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00			0.99			1.00	0.96		1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00	1.00		0.97	1.00
Frt	1.00	1.00			0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00			1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1765	3523			4896			1797	1518		1738	1562
Flt Permitted	0.24	1.00			0.92			0.74	1.00		0.73	1.00
Satd. Flow (perm)	449	3523			4500			1379	1518		1317	1562
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	189	1148	27	10	644	134	24	9	6	124	15	38
RTOR Reduction (vph)	0	2	0	0	36	0	0	0	5	0	0	31
Lane Group Flow (vph)	189	1173	0	0	752	0	0	33	1	0	139	7
Confl. Peds. (#/hr)	43		24	24		43	1		41	41		1
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	32.9	32.9			17.9			10.0	10.0		10.0	10.0
Effective Green, g (s)	32.9	32.9			17.9			10.0	10.0		10.0	10.0
Actuated g/C Ratio	0.62	0.62			0.34			0.19	0.19		0.19	0.19
Clearance Time (s)	5.0	5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	528	2191			1522			260	286		248	295
v/s Ratio Prot	0.07	c0.33										
v/s Ratio Perm	0.15				0.17			0.02	0.00		c0.11	0.00
v/c Ratio	0.36	0.54			0.49			0.13	0.00		0.56	0.02
Uniform Delay, d1	4.8	5.7			13.9			17.8	17.4		19.5	17.5
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.3			0.3			0.2	0.0		2.9	0.0
Delay (s)	5.3	5.9			14.2			18.0	17.4		22.3	17.5
Level of Service	A	A			B			B	B		C	B
Approach Delay (s)		5.8			14.2			17.9			21.3	
Approach LOS		A			B			B			C	




















Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 13: Kokea St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	1145	24	14	1064	163	28	28	19	132	11	86
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			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95			0.91			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00			0.99			1.00	0.95		1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00	1.00		0.97	1.00
Frt	1.00	1.00			0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98	1.00		0.96	1.00
Satd. Flow (prot)	1769	3524			4943			1815	1504		1721	1557
Flt Permitted	0.12	1.00			0.92			0.81	1.00		0.70	1.00
Satd. Flow (perm)	232	3524			4551			1507	1504		1261	1557
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	181	1180	25	14	1097	168	29	29	20	136	11	89
RTOR Reduction (vph)	0	1	0	0	20	0	0	0	16	0	0	71
Lane Group Flow (vph)	181	1204	0	0	1259	0	0	58	4	0	147	18
Confl. Peds. (#/hr)	28		30	30		28	3		41	41		3
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	45.9	45.9			30.3			13.7	13.7		13.7	13.7
Effective Green, g (s)	45.9	45.9			30.3			13.7	13.7		13.7	13.7
Actuated g/C Ratio	0.66	0.66			0.44			0.20	0.20		0.20	0.20
Clearance Time (s)	5.0	5.0			5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	387	2324			1981			296	296		248	306
v/s Ratio Prot	0.07	c0.34										
v/s Ratio Perm	0.24				c0.28			0.04	0.00		c0.12	0.01
v/c Ratio	0.47	0.52			0.64			0.20	0.01		0.59	0.06
Uniform Delay, d1	7.1	6.1			15.3			23.3	22.5		25.4	22.7
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.2			0.7			0.3	0.0		3.8	0.1
Delay (s)	8.0	6.3			16.0			23.7	22.5		29.2	22.8
Level of Service	A	A			B			C	C		C	C
Approach Delay (s)		6.5			16.0			23.4			26.8	
Approach LOS		A			B			C			C	

### Intersection Summary





















HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: Alakawa St/HCC Dwy & Dillingham Blvd

12/15/2014





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	946	411	230	511	13	224	0	163	0	0	0
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	5.0	5.0		5.0	5.0	5.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00			
Frbp, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.94			
Flpb, ped/bikes	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	1.00		1.00	1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1770	3539	1486	1770	3526		1681	1681	1483			
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00			
Satd. Flow (perm)	1770	3539	1486	1770	3526		1681	1681	1483			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	985	428	240	532	14	233	0	170	0	0	0
RTOR Reduction (vph)	0	0	124	0	1	0	0	0	140	0	0	0
Lane Group Flow (vph)	20	985	304	240	545	0	116	117	30	0	0	0
Confl. Peds. (#/hr)			29						51			
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm			
Protected Phases	5	2		1	6			8				
Permitted Phases			2				8		8			
Actuated Green, G (s)	7.1	34.8	34.8	17.8	45.5		14.2	14.2	14.2			
Effective Green, g (s)	7.1	34.8	34.8	17.8	45.5		14.2	14.2	14.2			
Actuated g/C Ratio	0.09	0.43	0.43	0.22	0.56		0.17	0.17	0.17			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	153	1505	632	385	1961		291	291	257			
v/s Ratio Prot	0.01	c0.28		c0.14	0.15							
v/s Ratio Perm			0.20				0.07	0.07	0.02			
v/c Ratio	0.13	0.65	0.48	0.62	0.28		0.40	0.40	0.11			
Uniform Delay, d1	34.5	18.7	17.0	29.0	9.5		30.0	30.0	28.5			
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.4	1.0	0.6	3.1	0.1		0.9	0.9	0.2			
Delay (s)	34.9	19.7	17.6	32.1	9.6		30.9	30.9	28.7			
Level of Service	C	B	B	C	A		C	C	C			
Approach Delay (s)		19.3			16.5			30.0			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			68.9%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: Alakawa St/HCC Dwy & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	924	380	210	769	22	497	6	313	0	0	0
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	5.0	5.0		5.0	5.0	5.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00			
Frbp, ped/bikes	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.93			
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	0.99	1.00			
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1770	3539	1457	1770	3524		1660	1667	1472			
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00			
Satd. Flow (perm)	1770	3539	1457	1770	3524		1660	1667	1472			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	953	392	216	793	23	512	6	323	0	0	0
RTOR Reduction (vph)	0	0	114	0	1	0	0	0	241	0	0	0
Lane Group Flow (vph)	19	953	278	216	815	0	261	257	82	0	0	0
Confl. Peds. (#/hr)			38				11		53			
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm			
Protected Phases	5	2		1	6			8				
Permitted Phases			2				8		8			
Actuated Green, G (s)	7.0	35.0	35.0	17.2	45.2		23.0	23.0	23.0			
Effective Green, g (s)	7.0	35.0	35.0	17.2	45.2		23.0	23.0	23.0			
Actuated g/C Ratio	0.08	0.39	0.39	0.19	0.50		0.25	0.25	0.25			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	137	1373	565	337	1765		423	425	375			
v/s Ratio Prot	0.01	c0.27		c0.12	0.23							
v/s Ratio Perm			0.19				c0.16	0.15	0.06			
v/c Ratio	0.14	0.69	0.49	0.64	0.46		0.62	0.60	0.22			
Uniform Delay, d1	38.8	23.1	20.9	33.7	14.6		29.7	29.6	26.5			
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Incremental Delay, d2	0.5	1.5	0.7	4.1	0.2		2.7	2.4	0.3			
Delay (s)	39.3	24.7	21.5	37.8	14.8		32.4	32.0	26.8			
Level of Service	D	C	C	D	B		C	C	C			
Approach Delay (s)		24.0			19.6			30.1			0.0	
Approach LOS		C			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.2				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.2				Sum of lost time (s)		15.0			
Intersection Capacity Utilization			68.6%				ICU Level of Service		C			
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 15: Costco Dwy & Dillingham Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↖	
Volume (vph)	1093	36	59	755	12	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frbp, ped/bikes	1.00		1.00	1.00	0.95	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Fr	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	3518		1770	3539	1592	
Flt Permitted	1.00		0.95	1.00	0.98	
Satd. Flow (perm)	3518		1770	3539	1592	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1115	37	60	770	12	22
RTOR Reduction (vph)	2	0	0	0	19	0
Lane Group Flow (vph)	1150	0	60	770	15	0
Confl. Peds. (#/hr)		14				26
Turn Type	NA		Prot	NA	Perm	
Protected Phases	2		1	6		
Permitted Phases					8	
Actuated Green, G (s)	26.9		4.3	36.2	6.7	
Effective Green, g (s)	26.9		4.3	36.2	6.7	
Actuated g/C Ratio	0.51		0.08	0.68	0.13	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1788		143	2421	201	
v/s Ratio Prot	c0.33		0.03	c0.22		
v/s Ratio Perm					c0.01	
v/c Ratio	0.64		0.42	0.32	0.07	
Uniform Delay, d1	9.5		23.1	3.4	20.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.8		2.0	0.1	0.2	
Delay (s)	10.3		25.1	3.4	20.5	
Level of Service	B		C	A	C	
Approach Delay (s)	10.3			5.0	20.5	
Approach LOS	B			A	C	

**Intersection Summary**

HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 15: Costco Dwy & Dillingham Blvd #1

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	
Volume (vph)	1071	100	234	917	75	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frbp, ped/bikes	1.00		1.00	1.00	0.94	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Fr <sub>t</sub>	0.99		1.00	1.00	0.89	
Fl <sub>t</sub> Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3477		1770	3539	1555	
Fl <sub>t</sub> Permitted	1.00		0.95	1.00	0.99	
Satd. Flow (perm)	3477		1770	3539	1555	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1104	103	241	945	77	297
RTOR Reduction (vph)	6	0	0	0	123	0
Lane Group Flow (vph)	1201	0	241	945	251	0
Confl. Peds. (#/hr)		19				42
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	41.6		18.1	64.7	20.3	
Effective Green, g (s)	41.6		18.1	64.7	20.3	
Actuated g/C Ratio	0.44		0.19	0.68	0.21	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1522		337	2410	332	
v/s Ratio Prot	c0.35		c0.14	0.27	c0.16	
v/s Ratio Perm						
v/c Ratio	0.79		0.72	0.39	0.76	
Uniform Delay, d <sub>1</sub>	22.9		36.0	6.6	35.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>	2.8		7.0	0.1	9.5	
Delay (s)	25.7		43.1	6.7	44.5	
Level of Service	C		D	A	D	
Approach Delay (s)	25.7			14.1	44.5	
Approach LOS	C			B	D	













Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 16: Dillingham Blvd & Akepo Ln













12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑				↗		↕	
Volume (veh/h)	0	1090	2	0	723	0	0	0	14	10	0	91
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1090	2	0	723	0	0	0	14	10	0	91
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		496			425							
pX, platoon unblocked	0.95			0.77			0.79	0.79	0.77	0.79	0.79	0.95
vC, conflicting volume	723			1092			1544	1814	546	1282	1815	362
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	602			511			874	1216	0	544	1217	222
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	97	100	88
cM capacity (veh/h)	922			805			169	142	831	329	142	743
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>						
Volume Total	727	365	362	362	14	101						
Volume Left	0	0	0	0	0	10						
Volume Right	0	2	0	0	14	91						
cSH	1700	1700	1700	1700	831	660						
Volume to Capacity	0.43	0.21	0.21	0.21	0.02	0.15						
Queue Length 95th (ft)	0	0	0	0	1	13						
Control Delay (s)	0.0	0.0	0.0	0.0	9.4	11.4						
Lane LOS					A	B						
Approach Delay (s)	0.0		0.0		9.4	11.4						
Approach LOS					A	B						
<b>Intersection Summary</b>												
Average Delay			0.7									
Intersection Capacity Utilization			49.7%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 16: Dillingham Blvd #1 & Akepo Ln

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑				↗		↘	
Volume (veh/h)	0	1290	6	0	1050	0	0	0	53	16	0	84
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1290	6	0	1050	0	0	0	53	16	0	84
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		496			425							
pX, platoon unblocked	0.88			0.72			0.78	0.78	0.72	0.78	0.78	0.88
vC, conflicting volume	1050			1296			1902	2343	648	1748	2346	525
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	776			618			874	1442	0	676	1445	178
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	93	93	100	89
cM capacity (veh/h)	733			685			168	102	776	246	101	732
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>						
Volume Total	860	436	525	525	53	100						
Volume Left	0	0	0	0	0	16						
Volume Right	0	6	0	0	53	84						
cSH	1700	1700	1700	1700	776	556						
Volume to Capacity	0.51	0.26	0.31	0.31	0.07	0.18						
Queue Length 95th (ft)	0	0	0	0	5	16						
Control Delay (s)	0.0	0.0	0.0	0.0	10.0	12.9						
Lane LOS					A	B						
Approach Delay (s)	0.0		0.0		10.0	12.9						
Approach LOS					A	B						
<b>Intersection Summary</b>												
Average Delay			0.7									
Intersection Capacity Utilization			55.3%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis  
 17: Kaaahi St & Dillingham Blvd

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↑	↑
Volume (vph)	1030	57	64	699	24	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.95	1.00	1.00
Frbp, ped/bikes	1.00			1.00	1.00	0.96
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5026			3522	1770	1523
Flt Permitted	1.00			0.78	0.95	1.00
Satd. Flow (perm)	5026			2754	1770	1523
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1132	63	70	768	26	19
RTOR Reduction (vph)	5	0	0	0	0	17
Lane Group Flow (vph)	1190	0	0	838	26	2
Confl. Peds. (#/hr)		49	49			37
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	34.8			34.8	5.1	5.1
Effective Green, g (s)	34.8			34.8	5.1	5.1
Actuated g/C Ratio	0.70			0.70	0.10	0.10
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3505			1920	180	155
v/s Ratio Prot	0.24				c0.01	
v/s Ratio Perm				c0.30		0.00
v/c Ratio	0.34			0.44	0.14	0.01
Uniform Delay, d1	3.0			3.3	20.4	20.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.4	0.0
Delay (s)	3.1			3.4	20.8	20.2
Level of Service	A			A	C	C
Approach Delay (s)	3.1			3.4	20.5	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 17: Kaaahi St & Dillingham Blvd #1

12/15/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↑	↑
Volume (vph)	1273	25	29	992	40	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.95	1.00	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Fr t	1.00			1.00	1.00	0.85
Fl t Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5062			3533	1770	1533
Fl t Permitted	1.00			0.89	0.95	1.00
Satd. Flow (perm)	5062			3148	1770	1533
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1299	26	30	1012	41	45
RTOR Reduction (vph)	2	0	0	0	0	40
Lane Group Flow (vph)	1323	0	0	1042	41	5
Confl. Peds. (#/hr)		57	57			28
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	35.0			35.0	5.6	5.6
Effective Green, g (s)	35.0			35.0	5.6	5.6
Actuated g/C Ratio	0.69			0.69	0.11	0.11
Clearance Time (s)	5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3501			2177	195	169
v/s Ratio Prot	0.26				c0.02	
v/s Ratio Perm				c0.33		0.00
v/c Ratio	0.38			0.48	0.21	0.03
Uniform Delay, d1	3.3			3.6	20.5	20.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.5	0.1
Delay (s)	3.3			3.8	21.0	20.1
Level of Service	A			A	C	C
Approach Delay (s)	3.3			3.8	20.6	
Approach LOS	A			A	C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			4.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			50.6		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.6%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 18: King St & Dillingham Blvd/Liliha St

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↓	↑↑		↓	↑↑↑			↑↑↑	
Volume (vph)	0	316	780	354	286	18	489	774	146	0	861	18
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	5.0		5.0	5.0			5.0	
Lane Util. Factor		0.91	0.91	0.91	0.91		0.86	0.86			0.91	
Frpb, ped/bikes		1.00	1.00	1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Fr t		0.92	0.85	1.00	0.99		1.00	0.98			1.00	
Fl t Protected		1.00	1.00	0.95	0.98		0.95	0.99			1.00	
Satd. Flow (prot)		3109	1441	1610	3271		1522	4654			5055	
Fl t Permitted		1.00	1.00	0.95	0.51		0.95	0.65			1.00	
Satd. Flow (perm)		3109	1441	1610	1705		1522	3032			5055	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	336	830	377	304	19	520	823	155	0	916	19
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	751	415	230	470	0	369	1118	0	0	935	0
Confl. Peds. (#/hr)						226			36			80
Turn Type		NA	pt+ov	Prot	NA		Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases												
Actuated Green, G (s)		46.4	98.0	29.6	81.0		46.6	89.0			37.4	
Effective Green, g (s)		46.4	98.0	29.6	81.0		46.6	89.0			37.4	
Actuated g/C Ratio		0.26	0.54	0.16	0.45		0.26	0.49			0.21	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		801	784	264	1024		394	1919			1050	
v/s Ratio Prot		c0.24	0.29	c0.14	0.08		c0.24	0.15			c0.18	
v/s Ratio Perm					0.13			0.14				
v/c Ratio		1.07dr	0.53	0.87	0.46		0.94	0.58			0.89	
Uniform Delay, d1		65.4	26.2	73.3	34.3		65.3	32.3			69.3	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		18.2	0.6	25.4	0.3		29.5	0.5			9.6	
Delay (s)		83.6	26.9	98.7	34.6		94.7	32.8			78.9	
Level of Service		F	C	F	C		F	C			E	
Approach Delay (s)		63.4			55.7			48.0			78.9	
Approach LOS		E			E			D			E	

Intersection Summary













HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.  
 c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 18: King St & Dillingham Blvd #1/Liliha St #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑		↑	↑↑↑			↑↑↑	
Volume (vph)	0	627	830	151	298	27	739	1221	154	0	627	26
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	5.0		5.0	5.0			5.0	
Lane Util. Factor		0.91	0.91	0.91	0.91		0.86	0.86			0.91	
Frpb, ped/bikes		1.00	1.00	1.00	0.97		1.00	1.00			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
FrT		0.94	0.85	1.00	0.99		1.00	0.99			0.99	
FlT Protected		1.00	1.00	0.95	1.00		0.95	0.99			1.00	
Satd. Flow (prot)		3200	1441	1610	3256		1522	4693			5019	
FlT Permitted		1.00	1.00	0.95	0.75		0.95	0.66			1.00	
Satd. Flow (perm)		3200	1441	1610	2433		1522	3109			5019	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	646	856	156	307	28	762	1259	159	0	646	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	1031	471	140	351	0	533	1640	0	0	673	0
Confl. Peds. (#/hr)						166			20			99
Turn Type		NA	pt+ov	Prot	NA		Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases												
Actuated Green, G (s)		54.0	119.0	15.0	74.0		60.0	96.0			31.0	
Effective Green, g (s)		54.0	119.0	15.0	74.0		60.0	96.0			31.0	
Actuated g/C Ratio		0.30	0.66	0.08	0.41		0.33	0.53			0.17	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		960	952	134	1068		507	2186			864	
v/s Ratio Prot		c0.32	0.33	c0.09	0.03		c0.35	0.25			0.13	
v/s Ratio Perm					0.11			c0.15				
v/c Ratio		1.07	0.49	1.04	0.33		1.05	0.75			0.78	
Uniform Delay, d1		63.0	15.4	82.5	36.1		60.0	32.7			71.2	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		51.0	0.4	90.2	0.2		54.1	1.5			4.5	
Delay (s)		114.0	15.8	172.7	36.3		114.1	34.2			75.7	
Level of Service		F	B	F	D		F	C			E	
Approach Delay (s)		83.2			75.2			53.7			75.7	
Approach LOS		F			E			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		68.1		HCM 2000 Level of Service				E				
HCM 2000 Volume to Capacity ratio		1.01										
Actuated Cycle Length (s)		180.0		Sum of lost time (s)				20.0				
Intersection Capacity Utilization		119.8%		ICU Level of Service				H				
Analysis Period (min)		15										
c Critical Lane Group												



Arterial Level of Service  
AM Peak Hour Existing Conditions

12/19/2014

Arterial Level of Service: EB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Puu hale Rd	7	14.6	26.7	0.1	16
Mokauea St	8	14.4	30.4	0.2	18
Kalihi St	9	29.8	43.9	0.1	12
McNeill St	10	16.1	30.2	0.1	16
Waiakamilo Rd	11	29.6	48.0	0.2	14
Total		104.4	179.3	0.7	15

Arterial Level of Service: WB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
McNeill St	10	11.2	30.3	0.2	22
Kalihi St	9	14.3	26.7	0.1	18
Mokauea St	8	11.1	26.0	0.1	20
Puu hale Rd	7	13.4	29.1	0.2	19
Laumaka St	6	8.1	20.2	0.1	21
Total		58.1	132.3	0.7	20

# HCM Signalized Intersection Capacity Analysis

## 6: OCCC Dwy/Laumaka St & Kamehameha Hwy /Kamehameha Hwy #1

12/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	2178	17	14	673	85	1	5	7	43	1	13
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	5.0			5.0			5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00			1.00	1.00
Frb, ped/bikes	1.00	1.00		1.00	0.99			0.98			1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			0.98	1.00
Frt	1.00	1.00		1.00	0.98			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	1.00
Satd. Flow (prot)	1747	5078		1769	3457			1689			1738	1583
Flt Permitted	0.35	1.00		0.06	1.00			0.98			0.72	1.00
Satd. Flow (perm)	641	5078		107	3457			1662			1315	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	79	2269	18	15	701	89	1	5	7	45	1	14
RTOR Reduction (vph)	0	0	0	0	5	0	0	6	0	0	0	13
Lane Group Flow (vph)	79	2287	0	15	785	0	0	7	0	0	46	1
Confl. Peds. (#/hr)	25		1	1		25			24	24		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	70.9	70.9		70.9	70.9			9.5			9.5	9.5
Effective Green, g (s)	70.9	70.9		70.9	70.9			9.5			9.5	9.5
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.11			0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	502	3982		83	2711			174			138	166
v/s Ratio Prot		c0.45			0.23							
v/s Ratio Perm	0.12			0.14				0.00			c0.03	0.00
v/c Ratio	0.16	0.57		0.18	0.29			0.04			0.33	0.01
Uniform Delay, d1	2.4	3.8		2.5	2.7			36.3			37.5	36.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.2		1.0	0.1			0.1			1.4	0.0
Delay (s)	2.5	4.0		3.5	2.8			36.4			38.9	36.3
Level of Service	A	A		A	A			D			D	D
Approach Delay (s)		4.0			2.8			36.4			38.3	
Approach LOS		A			A			D			D	

### Intersection Summary













HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Puuhale Rd & Kamehameha Hwy #1/Dillingham Blvd #1





















12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑		↘		↗	↖	↖	
Volume (vph)	0	1473	771	39	573	0	151	0	40	20	80	63
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	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.91	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Frbp, ped/bikes		1.00	0.96	1.00	1.00		1.00		0.93	1.00	0.96	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.97		1.00	0.93	1.00	
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.93	
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		5085	1519	1764	1863		1721		1473	1638	1679	
Flt Permitted		1.00	1.00	0.14	1.00		0.62		1.00	0.95	1.00	
Satd. Flow (perm)		5085	1519	261	1863		1130		1473	1638	1679	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1503	787	40	585	0	154	0	41	20	82	64
RTOR Reduction (vph)	0	0	130	0	0	0	0	0	32	0	25	0
Lane Group Flow (vph)	0	1503	657	40	585	0	154	0	9	20	121	0
Confl. Peds. (#/hr)	23		32	32		23	30		64	64		60
Turn Type		NA	Perm	Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		2			6							4
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		59.7	59.7	59.7	59.7		19.1		19.1	19.1	19.1	
Effective Green, g (s)		59.7	59.7	59.7	59.7		19.1		19.1	19.1	19.1	
Actuated g/C Ratio		0.67	0.67	0.67	0.67		0.22		0.22	0.22	0.22	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		3418	1021	175	1252		243		316	352	361	
v/s Ratio Prot		0.30			0.31							0.07
v/s Ratio Perm			c0.43	0.15			c0.14		0.01	0.01		
v/c Ratio		0.44	0.64	0.23	0.47		0.63		0.03	0.06	0.33	
Uniform Delay, d1		6.8	8.4	5.6	7.0		31.7		27.5	27.7	29.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.1	1.4	0.7	0.3		5.3		0.0	0.1	0.6	
Delay (s)		6.9	9.8	6.3	7.2		37.0		27.6	27.8	30.0	
Level of Service		A	A	A	A		D		C	C	C	
Approach Delay (s)		7.9			7.2			35.0				29.8
Approach LOS		A			A			D				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			88.8				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			84.4%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 8: Mokauea St & Dillingham Blvd #1

12/15/2014



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1443	25	15	471	31	58	71	46	62	106	54
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	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	1.00			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.96		1.00	0.94
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.99	1.00		0.99	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.98	1.00
Satd. Flow (prot)	1737	5069		1765	1839			1799	1512		1810	1496
Flt Permitted	0.40	1.00		0.13	1.00			0.79	1.00		0.83	1.00
Satd. Flow (perm)	740	5069		243	1839			1449	1512		1529	1496
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1503	26	16	491	32	60	74	48	65	110	56
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	33	0	0	30
Lane Group Flow (vph)	68	1527	0	16	520	0	0	134	15	0	175	26
Confl. Peds. (#/hr)	32		17	17		32	32		52	52		32
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	32.6	32.6		32.6	32.6			13.3	13.3		13.3	13.3
Effective Green, g (s)	32.6	32.6		32.6	32.6			13.3	13.3		13.3	13.3
Actuated g/C Ratio	0.58	0.58		0.58	0.58			0.24	0.24		0.24	0.24
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	431	2956		141	1072			344	359		363	355
v/s Ratio Prot		c0.30			0.28							
v/s Ratio Perm	0.09			0.07				0.09	0.01		c0.11	0.02
v/c Ratio	0.16	0.52		0.11	0.49			0.39	0.04		0.48	0.07
Uniform Delay, d1	5.3	7.0		5.2	6.8			17.9	16.4		18.3	16.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.2		0.4	0.3			0.7	0.0		1.0	0.1
Delay (s)	5.5	7.1		5.6	7.1			18.6	16.4		19.3	16.6
Level of Service	A	A		A	A			B	B		B	B
Approach Delay (s)		7.0			7.1			18.0			18.7	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Kalihi St & Dillingham Blvd #1

12/15/2014

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	1489	60	147	468	87	17	257	29	52	332	34
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	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.91		1.00	1.00			0.95			0.95	
Frb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	5046		1770	1819			3471			3460	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.83	
Satd. Flow (perm)	1770	5046		1770	1819			3178			2903	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	97	1584	64	156	498	93	18	273	31	55	353	36
RTOR Reduction (vph)	0	4	0	0	6	0	0	7	0	0	5	0
Lane Group Flow (vph)	97	1644	0	156	585	0	0	315	0	0	439	0
Confl. Peds. (#/hr)			30				17		1	1		17
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases							8			4		
Actuated Green, G (s)	10.2	44.3		12.6	46.7			19.9			19.9	
Effective Green, g (s)	10.2	44.3		12.6	46.7			19.9			19.9	
Actuated g/C Ratio	0.11	0.48		0.14	0.51			0.22			0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	196	2435		242	925			688			629	
v/s Ratio Prot	0.05	c0.33		c0.09	0.32							
v/s Ratio Perm								0.10			c0.15	
v/c Ratio	0.49	0.68		0.64	0.63			0.46			0.70	
Uniform Delay, d1	38.4	18.2		37.5	16.3			31.3			33.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	0.8		5.8	1.4			0.5			3.4	
Delay (s)	40.3	19.0		43.3	17.8			31.7			36.5	
Level of Service	D	B		D	B			C			D	
Approach Delay (s)		20.2			23.1			31.7			36.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: McNeill St & Dillingham Blvd #1

12/15/2014























													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 				 			 	
Volume (vph)	37	1478	56	13	638	9	48	25	49	26	34	153	
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	5.0			5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	1.00			1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	0.93	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			0.97	1.00		0.98	1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85	
Fit Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00	
Satd. Flow (prot)	1742	5050		1766	1857			1753	1498		1793	1480	
Fit Permitted	0.31	1.00		0.12	1.00			0.79	1.00		0.86	1.00	
Satd. Flow (perm)	566	5050		225	1857			1423	1498		1580	1480	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	39	1540	58	14	665	9	50	26	51	27	35	159	
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	37	0	0	124	
Lane Group Flow (vph)	39	1594	0	14	674	0	0	76	14	0	62	35	
Confl. Peds. (#/hr)	37		15	15		37	41		61	61		41	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm	
Protected Phases		2			6			8			4		
Permitted Phases	2			6			8		8	4		4	
Actuated Green, G (s)	37.1	37.1		37.1	37.1			13.5	13.5		13.5	13.5	
Effective Green, g (s)	37.1	37.1		37.1	37.1			13.5	13.5		13.5	13.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.22	0.22		0.22	0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	346	3091		137	1136			317	333		351	329	
v/s Ratio Prot		0.32			c0.36								
v/s Ratio Perm	0.07			0.06				c0.05	0.01		0.04	0.02	
v/c Ratio	0.11	0.52		0.10	0.59			0.24	0.04		0.18	0.11	
Uniform Delay, d1	4.9	6.7		4.9	7.2			19.3	18.5		19.1	18.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.3	0.8			0.4	0.1		0.2	0.1	
Delay (s)	5.0	6.8		5.2	8.0			19.7	18.5		19.3	18.9	
Level of Service	A	A		A	A			B	B		B	B	
Approach Delay (s)		6.8			7.9			19.2			19.0		
Approach LOS		A			A			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			8.7									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			60.6									Sum of lost time (s)	10.0
Intersection Capacity Utilization			86.1%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Waiakamilo Rd & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	1279	88	53	519	55	15	226	30	87	426	139
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	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3502		1770	3468		1770	3539	1562	1770	3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3502		1770	3468		1770	3539	1562	1770	3384	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	208	1305	90	54	530	56	15	231	31	89	435	142
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	25	0	27	0
Lane Group Flow (vph)	208	1391	0	54	580	0	15	231	6	89	550	0
Confl. Peds. (#/hr)	51		1	1		51	6		1	1		6
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	17.1	46.4		5.1	34.4		1.3	18.4	18.4	7.8	24.9	
Effective Green, g (s)	17.1	46.4		5.1	34.4		1.3	18.4	18.4	7.8	24.9	
Actuated g/C Ratio	0.18	0.47		0.05	0.35		0.01	0.19	0.19	0.08	0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	309	1663		92	1221		23	666	294	141	862	
v/s Ratio Prot	c0.12	c0.40		0.03	0.17		0.01	0.07		c0.05	c0.16	
v/s Ratio Perm									0.00			
v/c Ratio	0.67	0.84		0.59	0.47		0.65	0.35	0.02	0.63	0.64	
Uniform Delay, d1	37.7	22.3		45.3	24.6		48.0	34.4	32.3	43.6	32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.7	3.8		9.2	0.3		50.9	0.3	0.0	8.9	1.6	
Delay (s)	43.4	26.2		54.5	24.9		98.9	34.7	32.3	52.4	34.0	
Level of Service	D	C		D	C		F	C	C	D	C	
Approach Delay (s)		28.4			27.4			38.0			36.4	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	30.7		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.80											
Actuated Cycle Length (s)	97.7		Sum of lost time (s)				20.0					
Intersection Capacity Utilization	79.9%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												



Arterial Level of Service  
AM Peak Hour Recommended Contraflow Lane Conditions

12/19/2014

Arterial Level of Service: EB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Puu hale Rd	7	11.3	23.3	0.1	18
Mokauea St	8	11.0	27.1	0.2	21
Kalihi St	9	22.2	36.4	0.1	14
McNeill St	10	16.1	30.2	0.1	16
Waiakamilo Rd	11	32.8	51.3	0.2	13
Total		93.5	168.3	0.7	16

Arterial Level of Service: WB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
McNeill St	10	16.3	35.3	0.2	19
Kalihi St	9	18.7	31.1	0.1	16
Mokauea St	8	15.1	29.9	0.1	17
Puu hale Rd	7	17.6	33.1	0.2	17
Laumaka St	6	7.8	19.7	0.1	21
Total		75.5	149.1	0.7	18

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**APPENDIX G**  
**CAPACITY ANALYSIS CALCULATIONS**  
**KALIHI STREET**

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# HCM Signalized Intersection Capacity Analysis

## 1: Kalihi St & Beckley St

12/15/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵		↵	↑↑	↑↑	
Volume (vph)	305	74	46	684	499	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frb, ped/bikes	0.94		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1638		1770	3539	3510	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	1638		1770	3539	3510	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	343	83	52	769	561	27
RTOR Reduction (vph)	10	0	0	0	4	0
Lane Group Flow (vph)	416	0	52	769	584	0
Confl. Peds. (#/hr)		431				6
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	28.6		7.1	29.8	17.7	
Effective Green, g (s)	28.6		7.1	29.8	17.7	
Actuated g/C Ratio	0.42		0.10	0.44	0.26	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	684		183	1541	908	
v/s Ratio Prot	c0.25		0.03	c0.22	c0.17	
v/s Ratio Perm						
v/c Ratio	0.61		0.28	0.50	0.64	
Uniform Delay, d1	15.5		28.3	13.9	22.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.5		0.9	0.3	1.6	
Delay (s)	17.1		29.2	14.2	24.1	
Level of Service	B		C	B	C	
Approach Delay (s)	17.1			15.1	24.1	
Approach LOS	B			B	C	

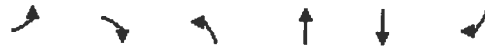
Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: Kalihi St/H-1 On-Ramp & Beckley St

12/15/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙		↘	↕	↕	↘
Volume (vph)	310	63	122	1238	315	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frbp, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1770	3539	3497	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	1732		1770	3539	3497	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	66	128	1303	332	29
RTOR Reduction (vph)	0	0	0	0	7	0
Lane Group Flow (vph)	392	0	128	1303	354	0
Confl. Peds. (#/hr)		56				
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	21.6		10.3	35.5	20.2	
Effective Green, g (s)	21.6		10.3	35.5	20.2	
Actuated g/C Ratio	0.32		0.15	0.53	0.30	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	557		271	1872	1052	
v/s Ratio Prot	c0.23		0.07	c0.37	0.10	
v/s Ratio Perm						
v/c Ratio	0.70		0.47	0.70	0.34	
Uniform Delay, d1	19.9		25.9	11.8	18.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	4.0		1.3	1.1	0.2	
Delay (s)	24.0		27.2	12.9	18.4	
Level of Service	C		C	B	B	
Approach Delay (s)	24.0			14.2	18.4	
Approach LOS	C			B	B	






















Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Kalihi St & King St

12/15/2014






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	992	32	125	439	136	25	363	72	180	349	39
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	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.91		1.00	0.93		1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3502		1770	3096		1770	3220		1770	3435	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3502		1770	3096		1770	3220		1770	3435	
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)	237	1078	35	136	477	148	27	395	78	196	379	42
RTOR Reduction (vph)	0	1	0	0	16	0	0	9	0	0	5	0
Lane Group Flow (vph)	237	1112	0	136	609	0	27	464	0	196	416	0
Confl. Peds. (#/hr)			103			369			479			69
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	25.5	55.2		16.8	46.5		3.7	33.2		22.0	51.5	
Effective Green, g (s)	25.5	55.2		16.8	46.5		3.7	33.2		22.0	51.5	
Actuated g/C Ratio	0.17	0.38		0.11	0.32		0.03	0.23		0.15	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	1313		202	978		44	726		264	1201	
v/s Ratio Prot	c0.13	c0.32		0.08	0.20		0.02	c0.14		c0.11	0.12	
v/s Ratio Perm												
v/c Ratio	0.77	0.85		0.67	0.62		0.61	0.64		0.74	0.35	
Uniform Delay, d1	58.1	42.1		62.6	42.9		71.0	51.6		59.9	35.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.6	5.2		8.5	1.2		22.8	1.9		10.7	0.2	
Delay (s)	69.7	47.4		71.1	44.1		93.8	53.4		70.6	35.6	
Level of Service	E	D		E	D		F	D		E	D	
Approach Delay (s)		51.3			48.9			55.6			46.7	
Approach LOS		D			D			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		50.5			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.78										
Actuated Cycle Length (s)		147.2			Sum of lost time (s)		20.0					
Intersection Capacity Utilization		83.9%			ICU Level of Service		E					
Analysis Period (min)		15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Kalihi St & King St

12/15/2014













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	694	10	140	683	290	35	754	46	126	160	36
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	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr t	1.00	1.00		1.00	0.96		1.00	0.99		1.00	0.97	
Fl t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3283		1770	3467		1770	3393	
Fl t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3523		1770	3283		1770	3467		1770	3393	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	264	708	10	143	697	296	36	769	47	129	163	37
RTOR Reduction (vph)	0	1	0	0	26	0	0	2	0	0	11	0
Lane Group Flow (vph)	264	717	0	143	967	0	36	814	0	129	189	0
Confl. Peds. (#/hr)			89			39			104			29
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	28.9	64.4		18.4	53.9		6.5	46.0		15.5	55.0	
Effective Green, g (s)	28.9	64.4		18.4	53.9		6.5	46.0		15.5	55.0	
Actuated g/C Ratio	0.18	0.39		0.11	0.33		0.04	0.28		0.09	0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	1380		198	1077		70	970		166	1135	
v/s Ratio Prot	c0.15	0.20		0.08	c0.29		0.02	c0.23		c0.07	0.06	
v/s Ratio Perm												
v/c Ratio	0.85	0.52		0.72	0.90		0.51	0.84		0.78	0.17	
Uniform Delay, d1	65.6	38.1		70.5	52.6		77.4	55.7		72.7	38.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.9	0.3		12.2	9.9		6.2	6.5		20.1	0.1	
Delay (s)	84.5	38.5		82.7	62.5		83.6	62.1		92.8	38.6	
Level of Service	F	D		F	E		F	E		F	D	
Approach Delay (s)		50.9			65.1			63.0			59.8	
Approach LOS		D			E			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		59.8			HCM 2000 Level of Service			E				
HCM 2000 Volume to Capacity ratio		0.86										
Actuated Cycle Length (s)		164.3			Sum of lost time (s)		20.0					
Intersection Capacity Utilization		89.8%			ICU Level of Service		E					
Analysis Period (min)		15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Kalihi St & Kaumualii St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	9	22	10	17	16	49	2	332	21	35	429	13
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			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frbp, ped/bikes		0.97			1.00			0.98			1.00	
Flpb, ped/bikes		1.00			0.98			1.00			0.99	
Frt		0.97			0.92			0.99			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1732			1662			3433			3453	
Flt Permitted		0.95			0.95			0.95			0.90	
Satd. Flow (perm)		1660			1596			3270			3113	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	11	26	12	20	19	58	2	395	25	42	511	15
RTOR Reduction (vph)	0	7	0	0	35	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	42	0	0	62	0	0	416	0	0	566	0
Confl. Peds. (#/hr)			135	135			65		257	257		65
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			17.2			17.2	
Effective Green, g (s)		18.0			18.0			17.2			17.2	
Actuated g/C Ratio		0.40			0.40			0.38			0.38	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		661			635			1244			1184	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.04			0.13			c0.18	
v/c Ratio		0.06			0.10			0.33			0.48	
Uniform Delay, d1		8.4			8.5			9.9			10.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.1			0.2			0.3	
Delay (s)		8.4			8.6			10.1			10.9	
Level of Service		A			A			B			B	
Approach Delay (s)		8.4			8.6			10.1			10.9	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		10.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		45.2			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		55.7%			ICU Level of Service			B				
Analysis Period (min)		15										














c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 3: Kalihi St & Kaumualii St




















12/15/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Volume (vph)	10	11	15	20	12	15	25	773	18	12	341	18	
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			5.0		
Lane Util. Factor		1.00			1.00			0.95			0.95		
Frb, ped/bikes		0.97			1.00			1.00			0.99		
Flpb, ped/bikes		1.00			0.98			1.00			1.00		
Frt		0.94			0.96			1.00			0.99		
Flt Protected		0.99			0.98			1.00			1.00		
Satd. Flow (prot)		1689			1708			3510			3481		
Flt Permitted		0.89			0.85			0.94			0.93		
Satd. Flow (perm)		1520			1475			3299			3233		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	11	12	16	21	13	16	26	814	19	13	359	19	
RTOR Reduction (vph)	0	14	0	0	14	0	0	1	0	0	3	0	
Lane Group Flow (vph)	0	25	0	0	36	0	0	858	0	0	388	0	
Confl. Peds. (#/hr)			72	72			98		30	30		98	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2				6	
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		5.3			5.3			29.3			29.3		
Effective Green, g (s)		5.3			5.3			29.3			29.3		
Actuated g/C Ratio		0.12			0.12			0.66			0.66		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		180			175			2167			2123		
v/s Ratio Prot													
v/s Ratio Perm		0.02			c0.02			c0.26			0.12		
v/c Ratio		0.14			0.21			0.40			0.18		
Uniform Delay, d1		17.6			17.7			3.5			3.0		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.4			0.6			0.1			0.0		
Delay (s)		18.0			18.3			3.7			3.0		
Level of Service		B			B			A			A		
Approach Delay (s)		18.0			18.3			3.7			3.0		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		4.4											
HCM 2000 Volume to Capacity ratio		0.37											
Actuated Cycle Length (s)		44.6											
Intersection Capacity Utilization		62.5%											
Analysis Period (min)		15											
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 9: Kalihi St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	1489	60	147	468	87	17	257	29	52	332	34
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	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frft	1.00	0.99		1.00	0.98			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	3511		1770	3456			3472			3465	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.80	
Satd. Flow (perm)	1770	3511		1770	3456			3138			2779	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	97	1584	64	156	498	93	18	273	31	55	353	36
RTOR Reduction (vph)	0	2	0	0	12	0	0	7	0	0	6	0
Lane Group Flow (vph)	97	1646	0	156	579	0	0	315	0	0	438	0
Confl. Peds. (#/hr)			30				17		1	1		17
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	10.7	58.5		13.0	60.8			21.9			21.9	
Effective Green, g (s)	10.7	58.5		13.0	60.8			21.9			21.9	
Actuated g/C Ratio	0.10	0.54		0.12	0.56			0.20			0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	174	1894		212	1938			633			561	
v/s Ratio Prot	0.05	c0.47		c0.09	0.17							
v/s Ratio Perm								0.10			c0.16	
v/c Ratio	0.56	0.87		0.74	0.30			0.50			0.78	
Uniform Delay, d1	46.6	21.6		46.0	12.6			38.4			41.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.8	4.5		12.5	0.1			0.6			7.0	
Delay (s)	50.4	26.2		58.5	12.6			39.0			48.0	
Level of Service	D	C		E	B			D			D	
Approach Delay (s)		27.5			22.2			39.0			48.0	
Approach LOS		C			C			D			D	




















### Intersection Summary

HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Kalihi St & Dillingham Blvd #1

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	1258	42	58	910	170	54	537	22	46	232	45
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	5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frft	1.00	1.00		1.00	0.98			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	3519		1770	3446			3502			3432	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.70	
Satd. Flow (perm)	1770	3519		1770	3446			3087			2417	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	191	1338	45	62	968	181	57	571	23	49	247	48
RTOR Reduction (vph)	0	2	0	0	13	0	0	2	0	0	11	0
Lane Group Flow (vph)	191	1381	0	62	1136	0	0	649	0	0	333	0
Confl. Peds. (#/hr)			10			5	5		2	2		5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases							8			4		
Actuated Green, G (s)	15.8	48.6		8.1	40.9			28.1				28.1
Effective Green, g (s)	15.8	48.6		8.1	40.9			28.1				28.1
Actuated g/C Ratio	0.16	0.49		0.08	0.41			0.28				0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	280	1713		143	1412			869				680
v/s Ratio Prot	c0.11	c0.39		0.04	0.33							
v/s Ratio Perm								c0.21				0.14
v/c Ratio	0.68	0.81		0.43	0.80			0.75				0.49
Uniform Delay, d1	39.6	21.6		43.7	25.9			32.6				29.9
Progression Factor	1.00	1.00		1.00	1.00			1.00				1.00
Incremental Delay, d2	6.7	2.9		2.1	3.4			3.5				0.6
Delay (s)	46.3	24.5		45.8	29.4			36.1				30.4
Level of Service	D	C		D	C			D				C
Approach Delay (s)		27.1			30.2			36.1				30.4
Approach LOS		C			C			D				C






















### Intersection Summary

HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 4: Kalihi St & Nimitz Hwy



























12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	3979	22	0	1462	62	40	122	99	161	329	39
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		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.86			0.95		1.00	1.00		1.00	0.95	
Frbp, ped/bikes	1.00	1.00			1.00		1.00	0.96		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.99		1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	6401			3510		1770	1669		1770	3459	
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	6401			3510		1770	1669		1770	3459	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	53	4145	23	0	1523	65	42	127	103	168	343	41
RTOR Reduction (vph)	0	0	0	0	1	0	0	12	0	0	4	0
Lane Group Flow (vph)	53	4168	0	0	1587	0	42	218	0	168	380	0
Confl. Peds. (#/hr)			8			5			33			22
Turn Type	Prot	NA			NA		Prot	NA		Prot	NA	
Protected Phases	7	8			8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	12.5	147.0			147.0		8.8	33.1		23.0	47.3	
Effective Green, g (s)	12.5	147.0			147.0		8.8	33.1		23.0	47.3	
Actuated g/C Ratio	0.05	0.62			0.62		0.04	0.14		0.10	0.20	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	93	3993			2190		66	234		172	694	
v/s Ratio Prot	c0.03	c0.65			0.45		0.02	c0.13		c0.09	0.11	
v/s Ratio Perm												
v/c Ratio	0.57	1.04			0.72		0.64	0.93		0.98	0.55	
Uniform Delay, d1	108.9	44.3			30.4		111.8	100.1		106.0	84.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.8	27.4			1.2		18.4	40.3		61.1	0.9	
Delay (s)	116.7	71.7			31.6		130.2	140.4		167.2	85.4	
Level of Service	F	E			C		F	F		F	F	
Approach Delay (s)		72.3			31.6			138.8			110.3	
Approach LOS		E			C			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		68.4										
HCM 2000 Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		235.6										
Intersection Capacity Utilization		100.7%							20.0			
Analysis Period (min)		15										
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 4: Kalihi St & Nimitz Hwy

12/15/2014












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Volume (vph)	94	2616	12	105	2650	108	68	206	113	112	175	102
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	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frft	1.00	1.00		1.00	0.99		1.00	0.95		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5081		1770	5039		1770	1735		1770	3272	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5081		1770	5039		1770	1735		1770	3272	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	96	2669	12	107	2704	110	69	210	115	114	179	104
RTOR Reduction (vph)	0	0	0	0	2	0	0	8	0	0	34	0
Lane Group Flow (vph)	96	2681	0	107	2812	0	69	317	0	114	249	0
Confl. Peds. (#/hr)			5			9			15			20
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.7	138.6		17.1	141.0		14.0	45.5		16.8	48.3	
Effective Green, g (s)	14.7	138.6		17.1	141.0		14.0	45.5		16.8	48.3	
Actuated g/C Ratio	0.06	0.58		0.07	0.59		0.06	0.19		0.07	0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	109	2958		127	2985		104	331		124	664	
v/s Ratio Prot	0.05	0.53		c0.06	c0.56		0.04	c0.18		c0.06	c0.08	
v/s Ratio Perm												
v/c Ratio	0.88	0.91		0.84	0.94		0.66	0.96		0.92	0.37	
Uniform Delay, d1	110.8	44.0		109.1	44.7		109.7	95.3		109.9	81.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.7	4.5		37.0	7.0		14.8	37.8		55.8	0.4	
Delay (s)	161.5	48.4		146.2	51.7		124.5	133.1		165.7	82.2	
Level of Service	F	D		F	D		F	F		F	F	
Approach Delay (s)		52.3			55.2			131.6			106.2	
Approach LOS		D			E			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		61.7					HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		238.0					Sum of lost time (s)		20.0			
Intersection Capacity Utilization		102.6%					ICU Level of Service		G			
Analysis Period (min)		15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 1: Kalihi St/H-1 On-Ramp & Beckley St

12/15/2014

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	310	63	122	1238	315	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frbp, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1770	3539	3497	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	1732		1770	3539	3497	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	66	128	1303	332	29
RTOR Reduction (vph)	0	0	0	0	7	0
Lane Group Flow (vph)	392	0	128	1303	354	0
Confl. Peds. (#/hr)		56				
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	21.6		10.3	35.5	20.2	
Effective Green, g (s)	21.6		10.3	35.5	20.2	
Actuated g/C Ratio	0.32		0.15	0.53	0.30	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	557		271	1872	1052	
v/s Ratio Prot	c0.23		0.07	c0.37	0.10	
v/s Ratio Perm						
v/c Ratio	0.70		0.47	0.70	0.34	
Uniform Delay, d1	19.9		25.9	11.8	18.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	4.0		1.3	1.1	0.2	
Delay (s)	24.0		27.2	12.9	18.4	
Level of Service	C		C	B	B	
Approach Delay (s)	24.0			14.2	18.4	
Approach LOS	C			B	B	





















Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Kalihi St & King St

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	694	10	140	683	290	35	754	46	126	160	36
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	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	1.00	
Frb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3517		1770	3283		1770	3467		1770	1786	
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3517		1770	3283		1178	3467		1770	1786	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	264	708	10	143	697	296	36	769	47	129	163	37
RTOR Reduction (vph)	0	1	0	0	26	0	0	2	0	0	5	0
Lane Group Flow (vph)	264	717	0	143	967	0	36	814	0	129	195	0
Confl. Peds. (#/hr)			89			39			104			29
Turn Type	Prot	NA		Prot	NA		Perm	NA		Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)	29.0	64.5		18.4	53.9		44.9	44.9		15.5	65.4	
Effective Green, g (s)	29.0	64.5		18.4	53.9		44.9	44.9		15.5	65.4	
Actuated g/C Ratio	0.18	0.39		0.11	0.33		0.27	0.27		0.09	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	1389		199	1083		323	953		168	715	
v/s Ratio Prot	c0.15	0.20		0.08	c0.29			c0.23		c0.07	0.11	
v/s Ratio Perm							0.03					
v/c Ratio	0.84	0.52		0.72	0.89		0.11	0.85		0.77	0.27	
Uniform Delay, d1	64.9	37.5		70.0	52.0		44.3	56.1		72.1	32.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.0	0.3		11.7	9.5		0.2	7.5		18.7	0.2	
Delay (s)	82.9	37.9		81.7	61.5		44.4	63.6		90.9	33.2	
Level of Service	F	D		F	E		D	E		F	C	
Approach Delay (s)		50.0			64.0			62.8			55.8	
Approach LOS		D			E			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			58.7			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			163.3			Sum of lost time (s)		20.0				
Intersection Capacity Utilization			89.8%			ICU Level of Service			E			
Analysis Period (min)			15									













c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 3: Kalihi St & Kaumualii St

12/15/2014




















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕↕↕			↕		
Volume (vph)	10	11	15	20	12	15	25	773	18	0	353	18	
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			5.0		
Lane Util. Factor		1.00			1.00			0.91			1.00		
Frb, ped/bikes		0.96			1.00			1.00			0.99		
Flpb, ped/bikes		1.00			0.97			1.00			1.00		
Frt		0.94			0.96			1.00			0.99		
Flt Protected		0.99			0.98			1.00			1.00		
Satd. Flow (prot)		1665			1690			5044			1838		
Flt Permitted		0.89			0.85			0.92			1.00		
Satd. Flow (perm)		1498			1459			4671			1838		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	11	12	16	21	13	16	26	814	19	0	372	19	
RTOR Reduction (vph)	0	14	0	0	14	0	0	2	0	0	2	0	
Lane Group Flow (vph)	0	25	0	0	36	0	0	857	0	0	389	0	
Confl. Peds. (#/hr)			72	72			98		30	30		98	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2						
Actuated Green, G (s)		4.0			4.0			26.4			26.4		
Effective Green, g (s)		4.0			4.0			26.4			26.4		
Actuated g/C Ratio		0.10			0.10			0.65			0.65		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		148			144			3052			1201		
v/s Ratio Prot											c0.21		
v/s Ratio Perm		0.02			c0.02			0.18					
v/c Ratio		0.17			0.25			0.28			0.32		
Uniform Delay, d1		16.7			16.8			3.0			3.1		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.5			0.9			0.1			0.2		
Delay (s)		17.2			17.7			3.0			3.2		
Level of Service		B			B			A			A		
Approach Delay (s)		17.2			17.7			3.0			3.2		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			4.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			40.4									Sum of lost time (s)	10.0
Intersection Capacity Utilization			56.0%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Kalihi St & Dillingham Blvd #1

12/18/2014






















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	180	1258	42	58	910	170	54	537	22	46	232	45	
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	5.0			5.0			5.0		
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Fipb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.98			0.99			0.98		
Fit Protected	0.95	1.00		0.95	1.00			1.00			0.99		
Satd. Flow (prot)	1770	3519		1770	3446			3502			3432		
Fit Permitted	0.95	1.00		0.95	1.00			0.88			0.69		
Satd. Flow (perm)	1770	3519		1770	3446			3084			2392		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	191	1338	45	62	968	181	57	571	23	49	247	48	
RTOR Reduction (vph)	0	2	0	0	13	0	0	2	0	0	11	0	
Lane Group Flow (vph)	191	1381	0	62	1136	0	0	649	0	0	333	0	
Confl. Peds. (#/hr)			10			5	5		2	2		5	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			8				4	
Permitted Phases							8			4			
Actuated Green, G (s)	15.8	49.5		8.1	41.8			27.6				27.6	
Effective Green, g (s)	15.8	49.5		8.1	41.8			27.6				27.6	
Actuated g/C Ratio	0.16	0.49		0.08	0.42			0.28				0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0				5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0				3.0	
Lane Grp Cap (vph)	279	1738		143	1437			849				658	
v/s Ratio Prot	c0.11	c0.39		0.04	0.33								
v/s Ratio Perm								c0.21				0.14	
v/c Ratio	0.68	0.79		0.43	0.79			0.76				0.51	
Uniform Delay, d1	39.8	21.1		43.9	25.4			33.3				30.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00				1.00	
Incremental Delay, d2	6.8	2.6		2.1	3.1			4.1				0.6	
Delay (s)	46.6	23.7		46.0	28.4			37.4				31.2	
Level of Service	D	C		D	C			D				C	
Approach Delay (s)		26.5			29.3			37.4				31.2	
Approach LOS		C			C			D				C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.7									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			100.2									Sum of lost time (s)	15.0
Intersection Capacity Utilization			85.7%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Kalihi St & Nimitz Hwy

12/15/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	94	2616	12	105	2650	108	68	206	113	112	175	102
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	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frft	1.00	1.00		1.00	0.99		1.00	0.95		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5081		1770	5039		1770	1735		1770	3272	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5081		1770	5039		1770	1735		1770	3272	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	96	2669	12	107	2704	110	69	210	115	114	179	104
RTOR Reduction (vph)	0	0	0	0	2	0	0	8	0	0	34	0
Lane Group Flow (vph)	96	2681	0	107	2812	0	69	317	0	114	249	0
Confl. Peds. (#/hr)			5			9			15			20
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.7	138.6		17.1	141.0		14.0	45.5		16.8	48.3	
Effective Green, g (s)	14.7	138.6		17.1	141.0		14.0	45.5		16.8	48.3	
Actuated g/C Ratio	0.06	0.58		0.07	0.59		0.06	0.19		0.07	0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	109	2958		127	2985		104	331		124	664	
v/s Ratio Prot	0.05	0.53		c0.06	c0.56		0.04	c0.18		c0.06	c0.08	
v/s Ratio Perm												
v/c Ratio	0.88	0.91		0.84	0.94		0.66	0.96		0.92	0.37	
Uniform Delay, d1	110.8	44.0		109.1	44.7		109.7	95.3		109.9	81.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.7	4.5		37.0	7.0		14.8	37.8		55.8	0.4	
Delay (s)	161.5	48.4		146.2	51.7		124.5	133.1		165.7	82.2	
Level of Service	F	D		F	D		F	F		F	F	
Approach Delay (s)		52.3			55.2			131.6			106.2	
Approach LOS		D			E			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		61.7										
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		238.0							20.0			
Intersection Capacity Utilization		102.6%							G			
Analysis Period (min)		15										

c Critical Lane Group