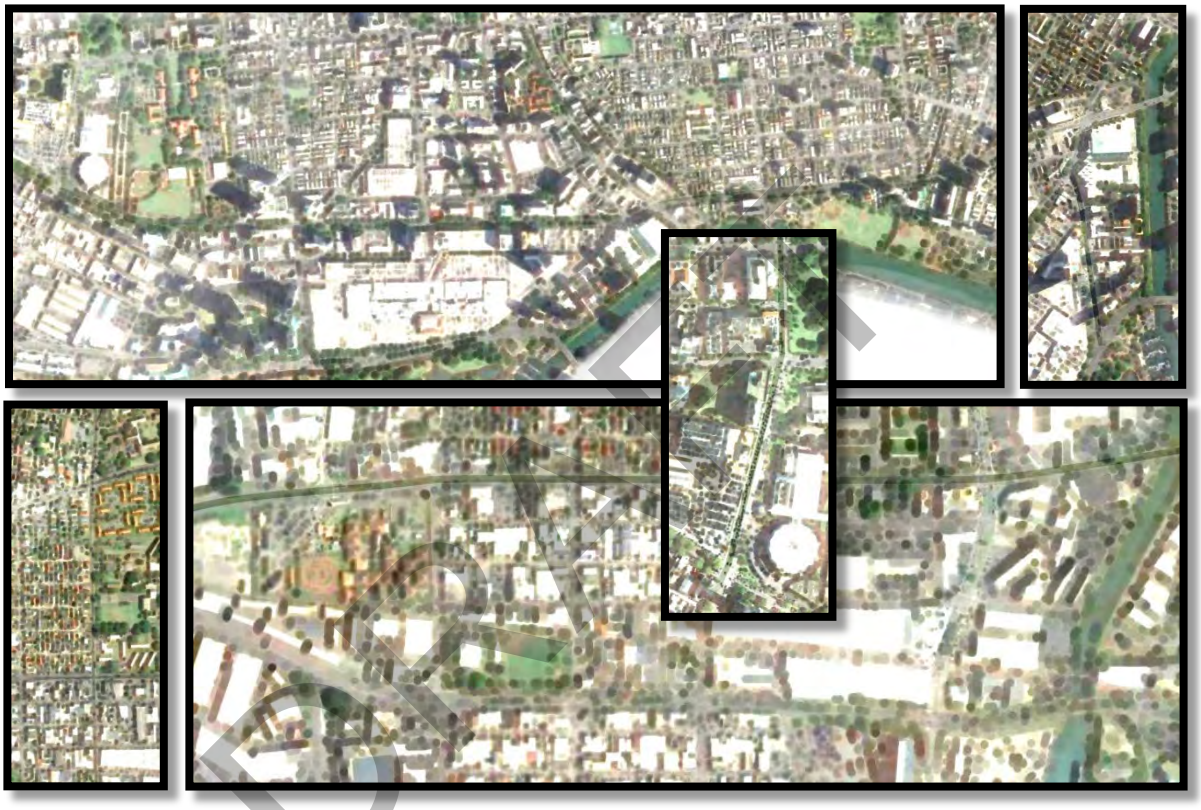
Contra-Flow Operations



Within City and County of Honolulu Jurisdiction

Traffic Assessment Report

Prepared For

City and County of Honolulu
Department of Transportation Services
in Cooperation with the Oahu Metropolitan
Planning Organization and the United States
Department of Transportation

February 2016

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TRAFFIC ASSESSMENT REPORT

OF

CONTRA-FLOW OPERATIONS

Within City and County of Honolulu Jurisdiction

DRAFT

Prepared by:

City and County of Honolulu
Department of Transportation Services
in Cooperation with the Oahu Metropolitan Planning Organization
and the United States Department of Transportation

February 2016

DISCLAIMER

This report was funded in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation. The views and opinions of the agency expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.

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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.

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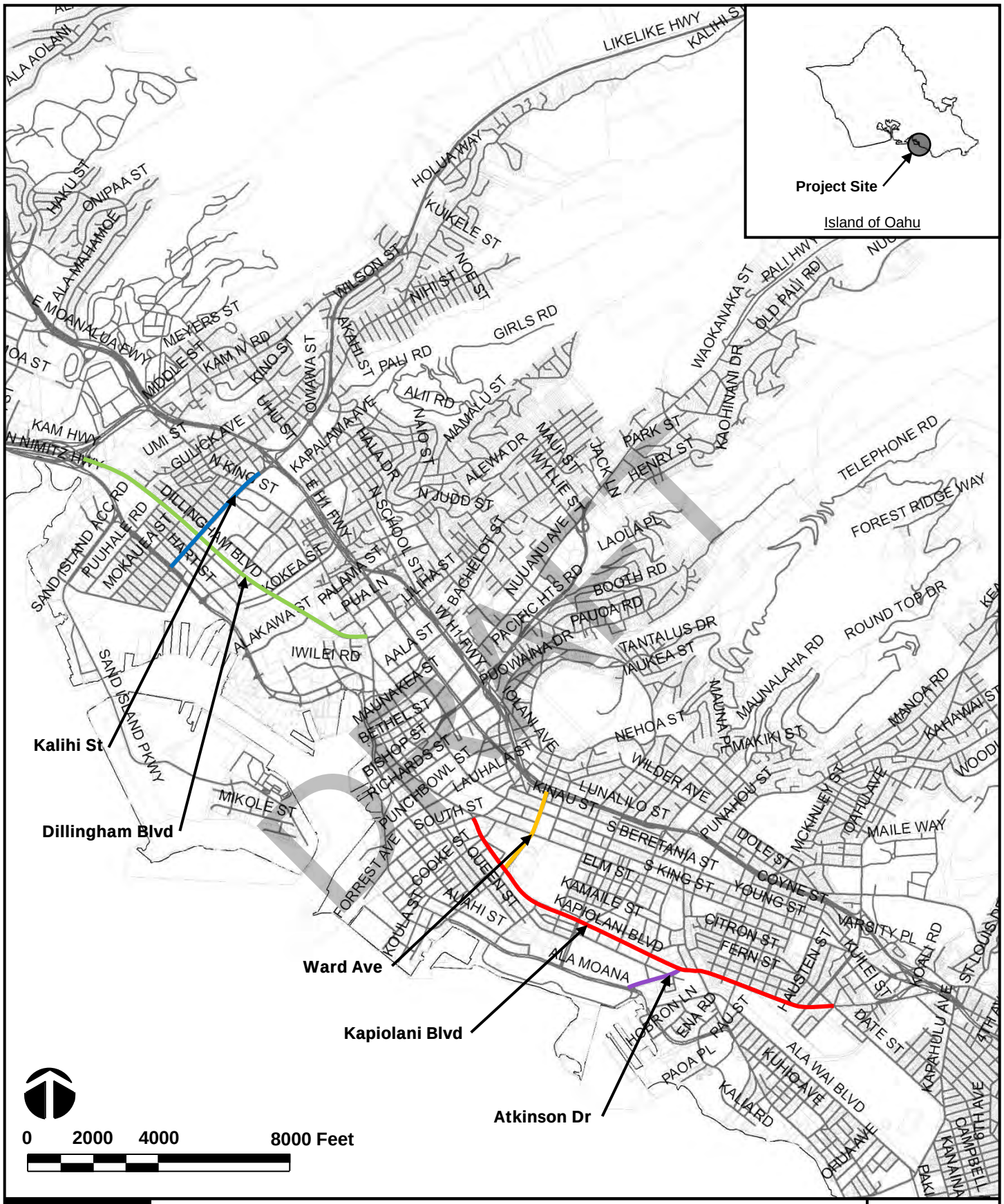

CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

LOCATION MAP AND VICINITY MAP

FIGURE 1

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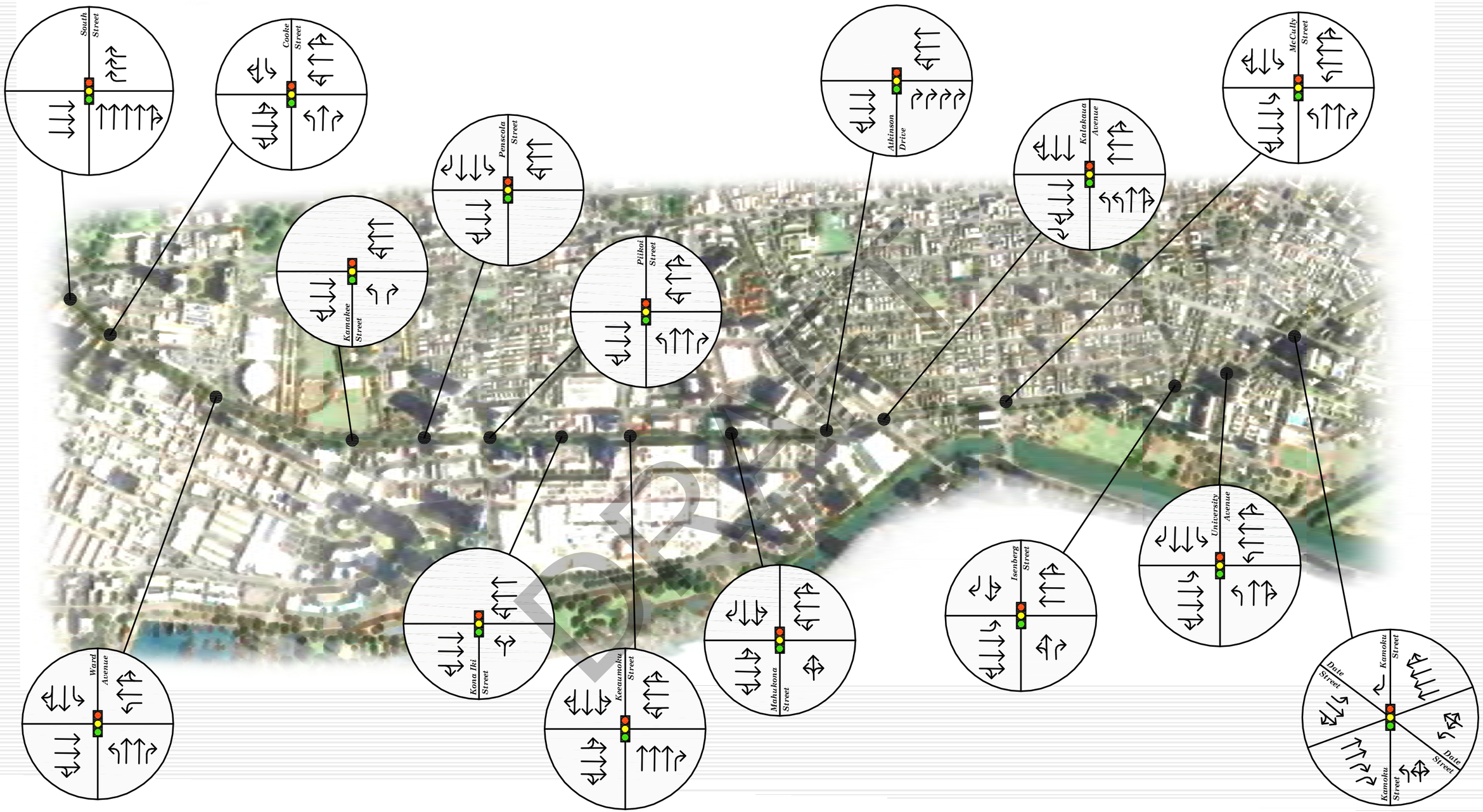

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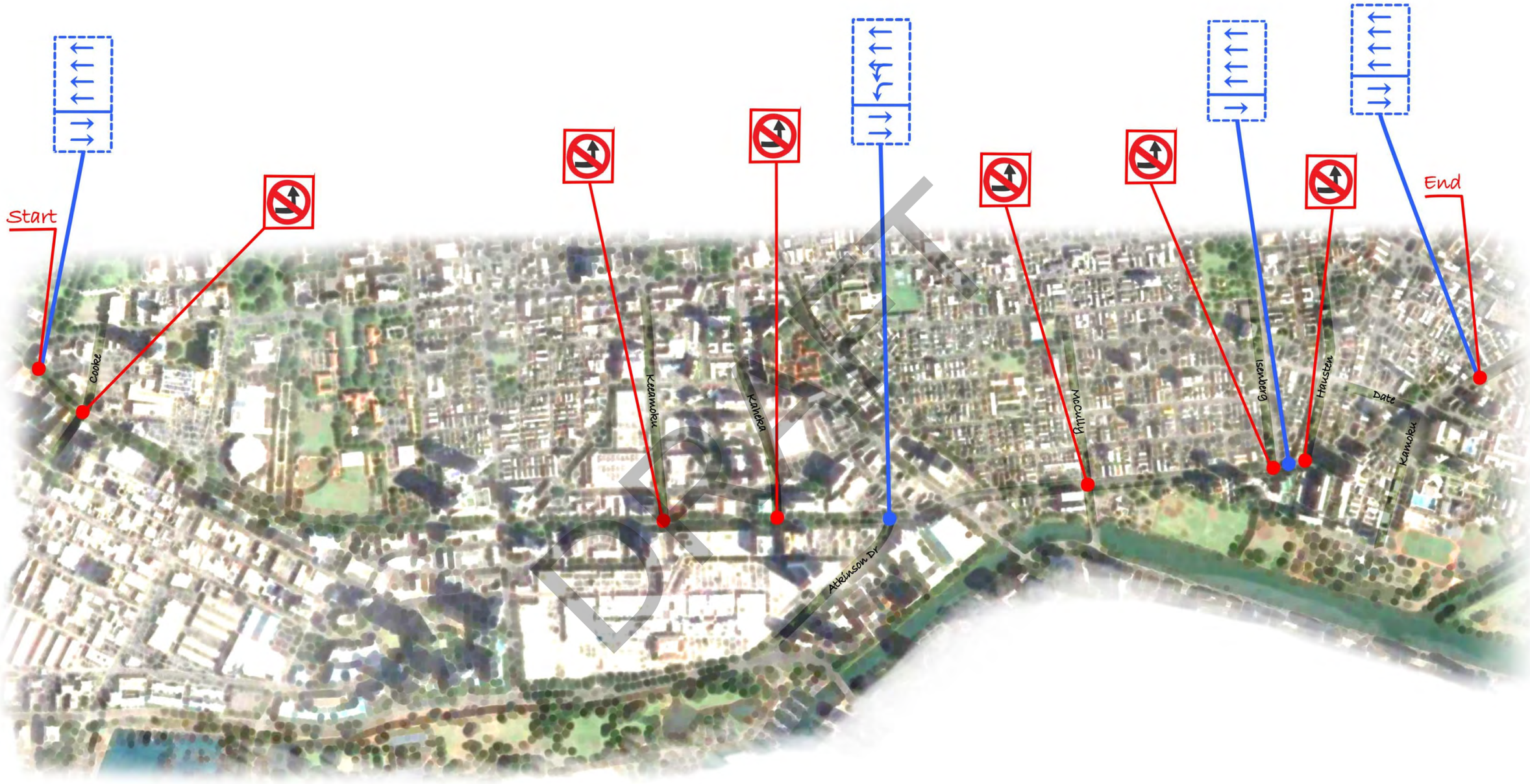
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS
KAPIOLANI BOULEVARD

FIGURE
2



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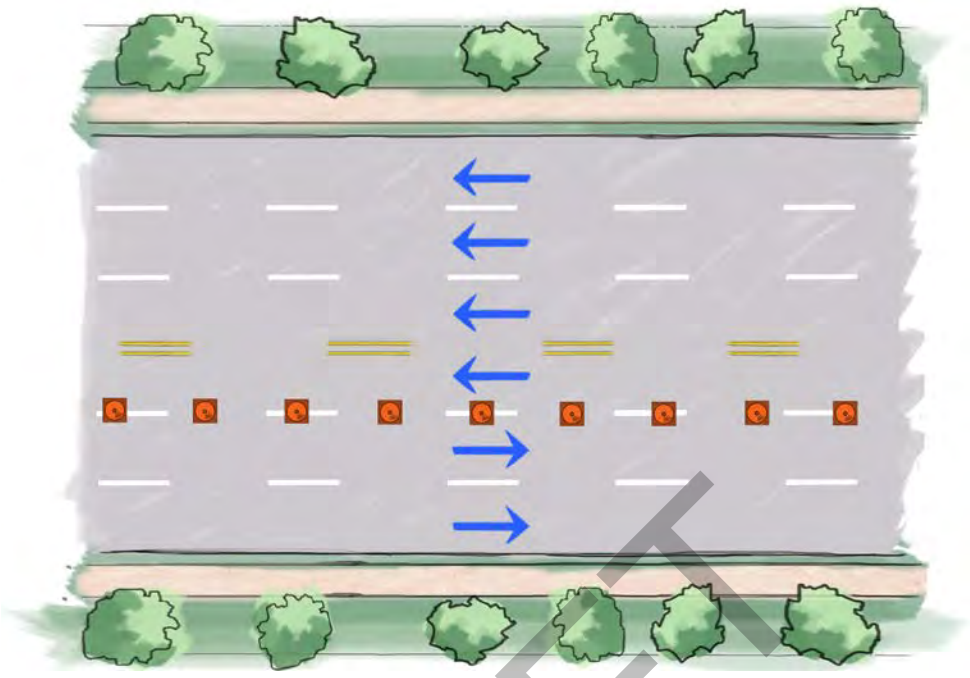
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

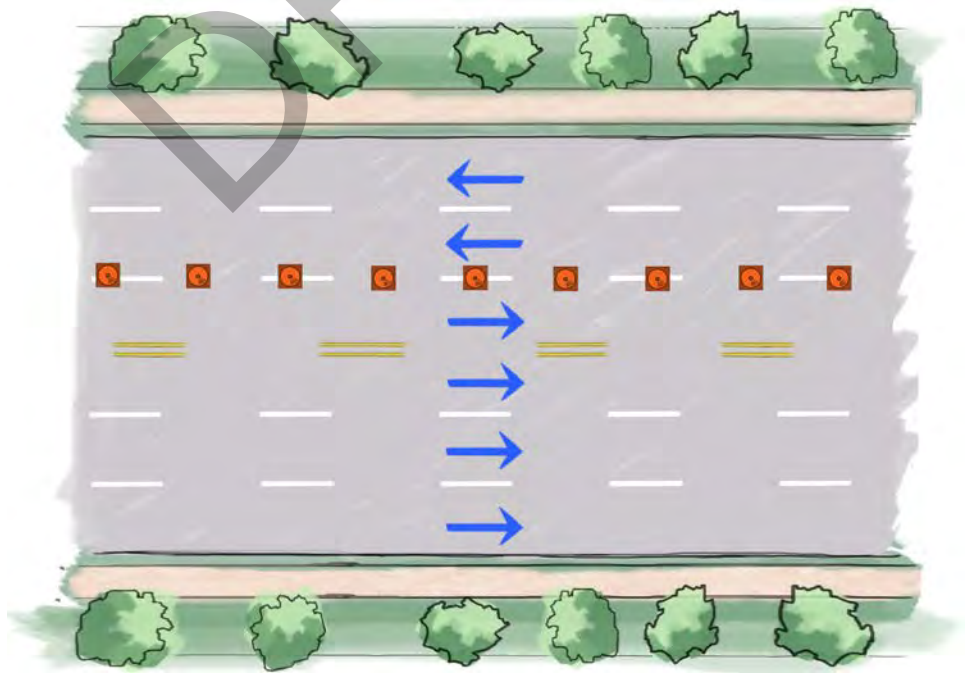
EXISTING CONTRA-FLOW OPERATIONS
KAPIOLANI BOULEVARD – AM PEAK PERIOD

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

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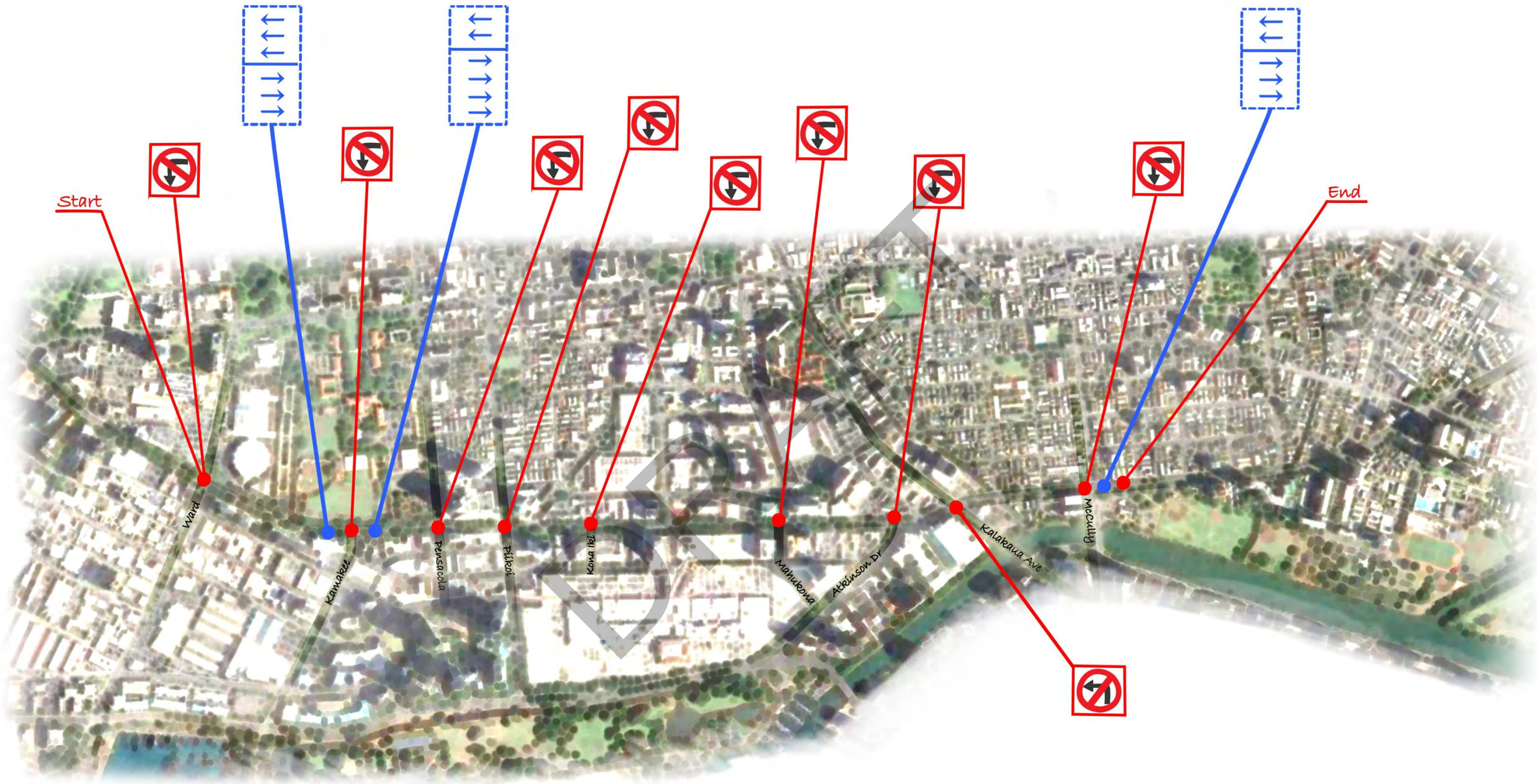

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CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

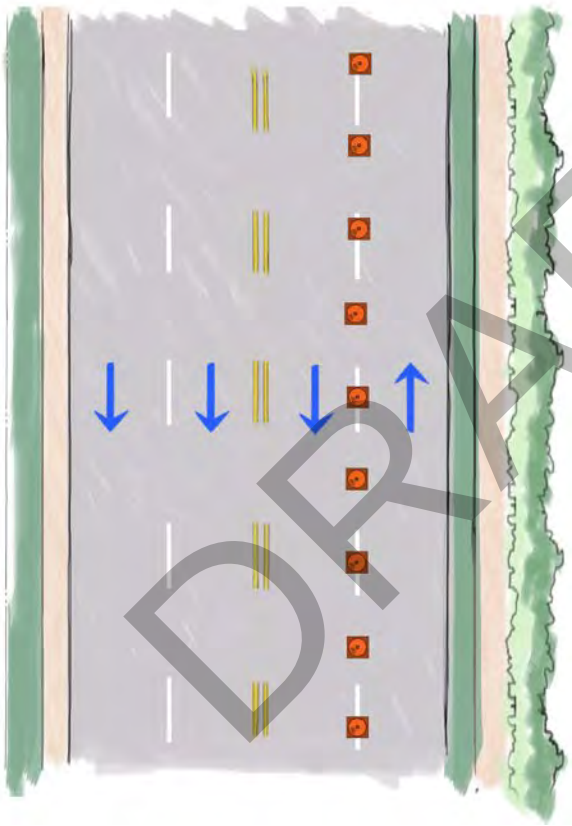
EXISTING CONTRA-FLOW OPERATIONS
KAPIOLANI BOULEVARD – PM PEAK PERIOD

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

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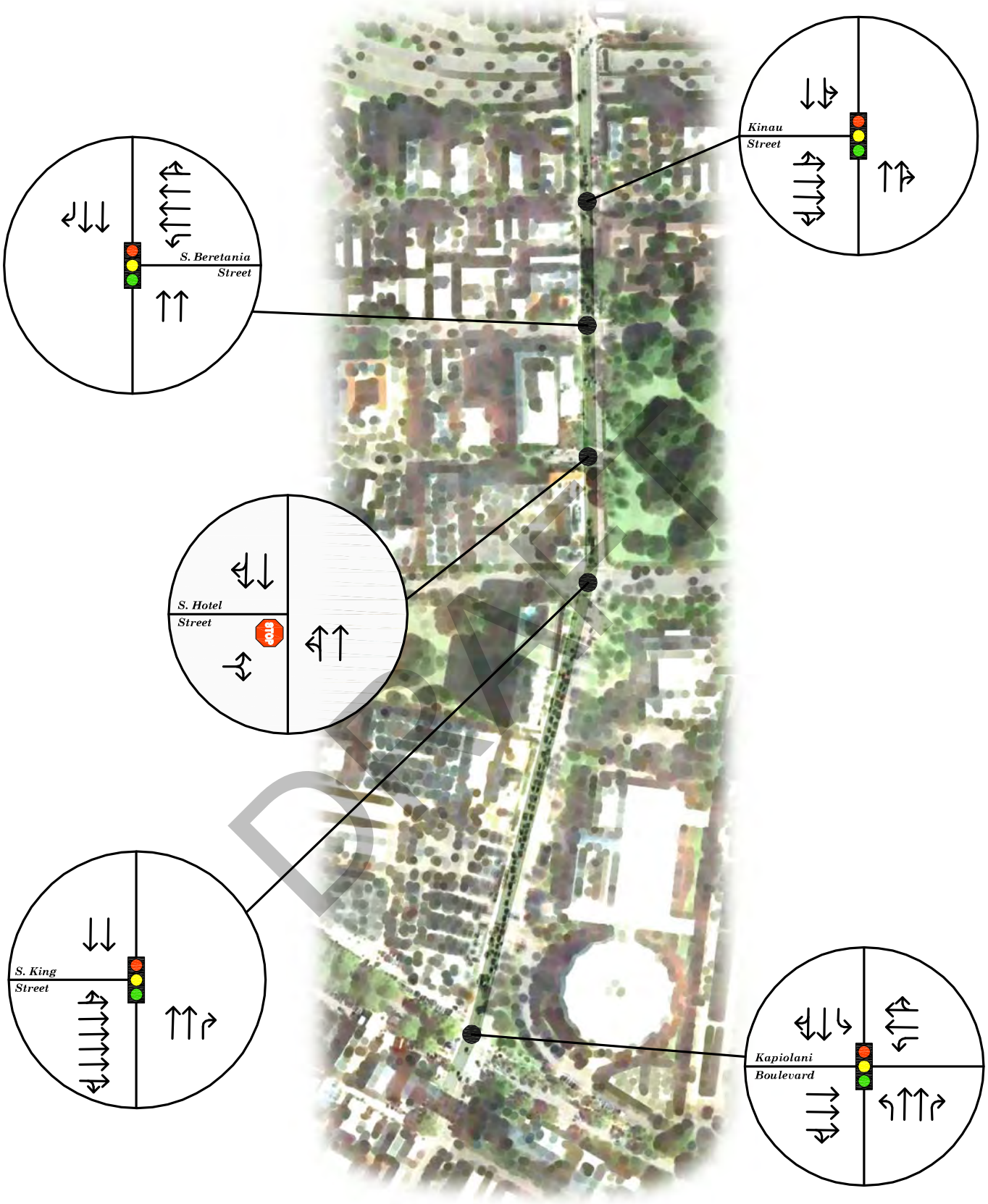
Atkinson Drive

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).



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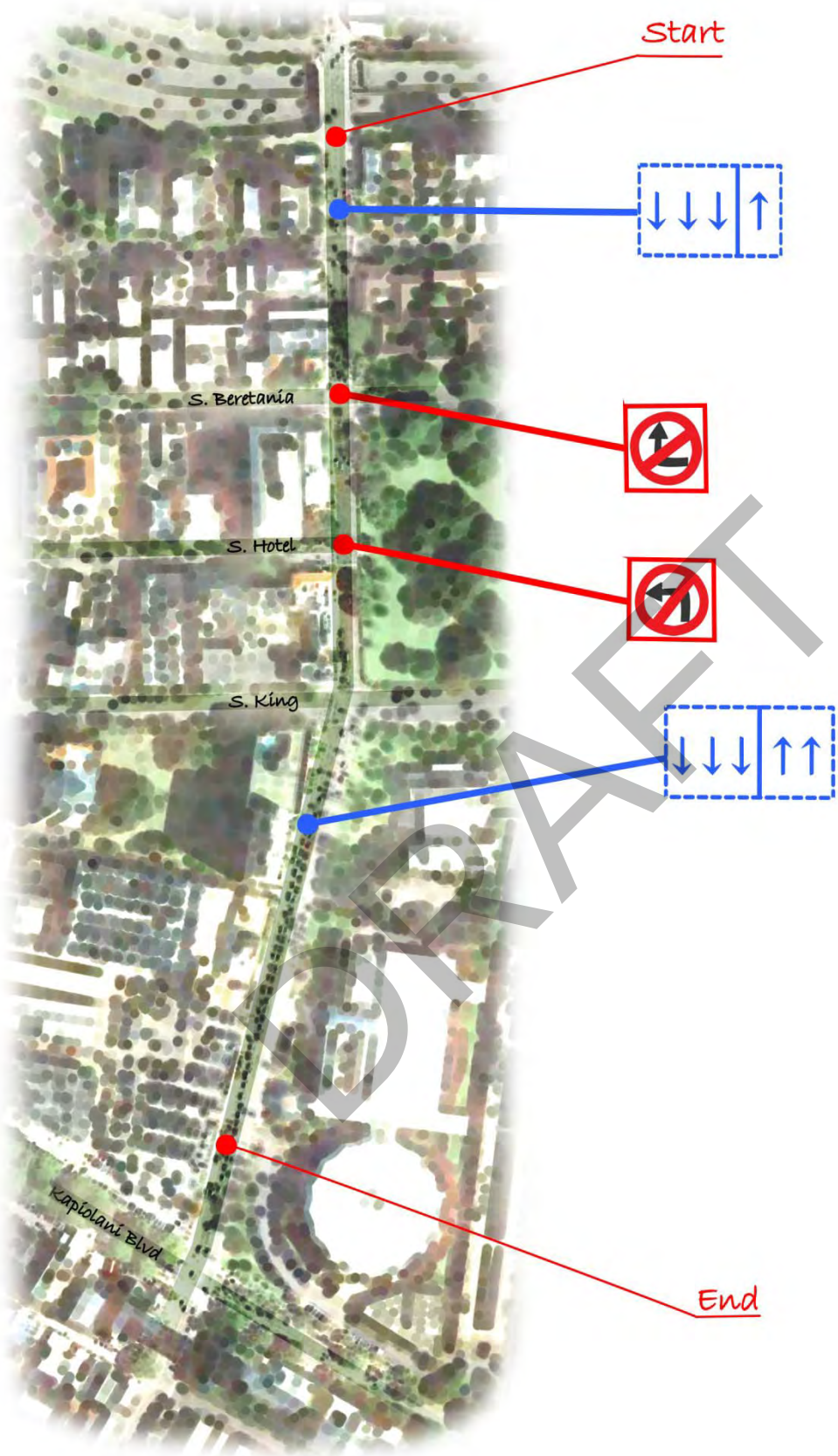
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS
WARD AVENUE

FIGURE
5



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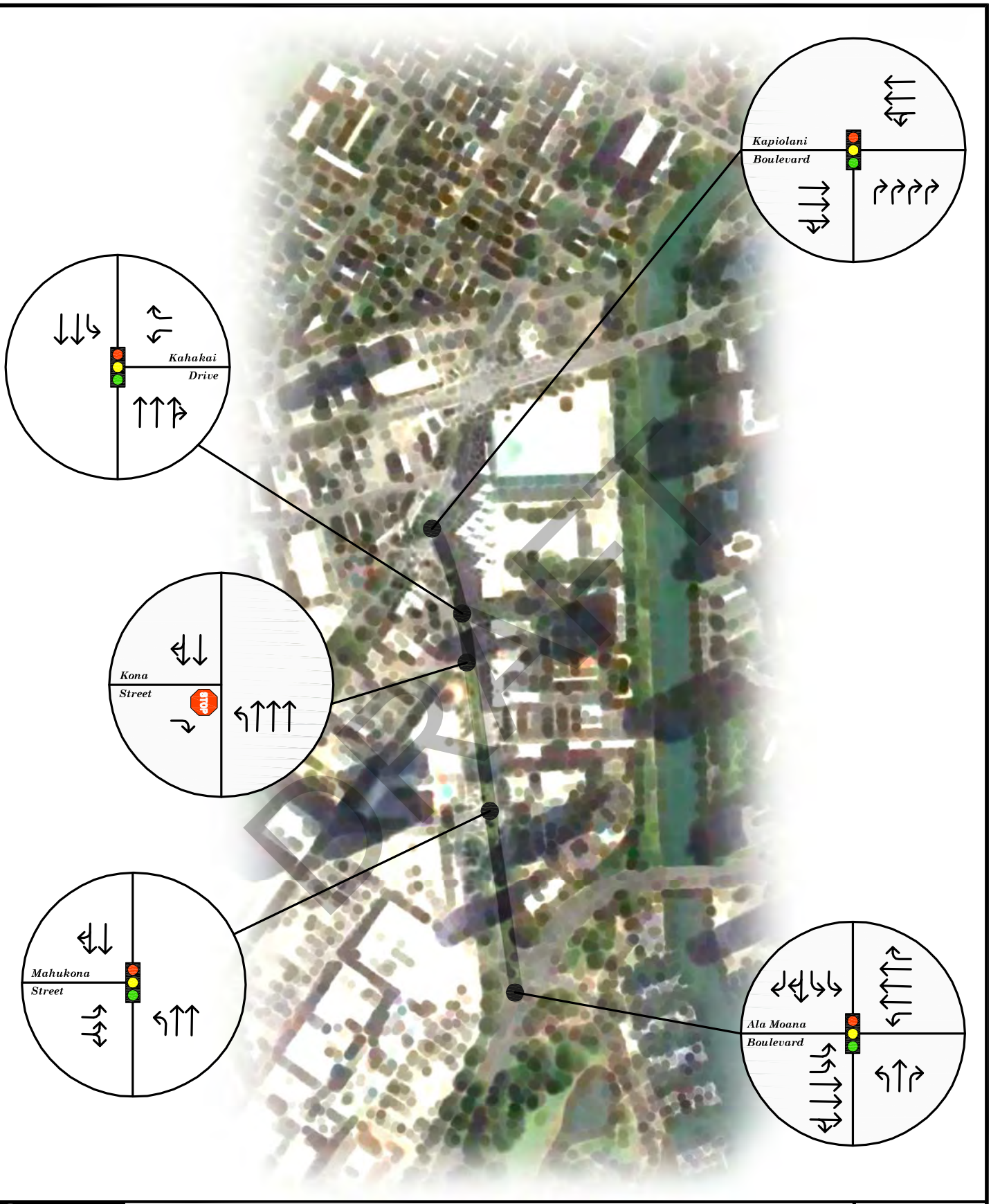
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS
WARD AVENUE – AM PEAK PERIOD

FIGURE
6



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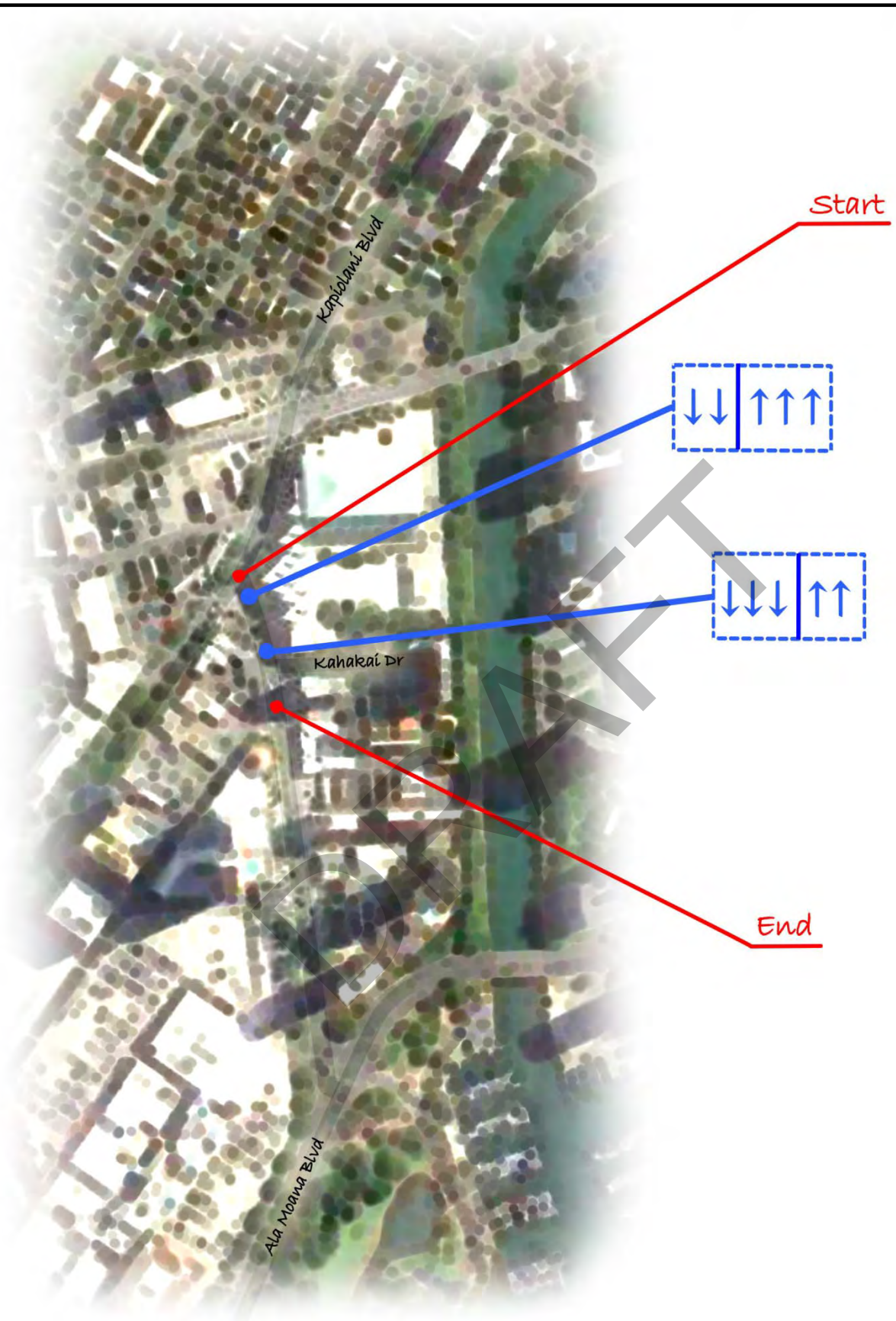
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING LANE CONFIGURATIONS
ATKINSON DRIVE

FIGURE 7



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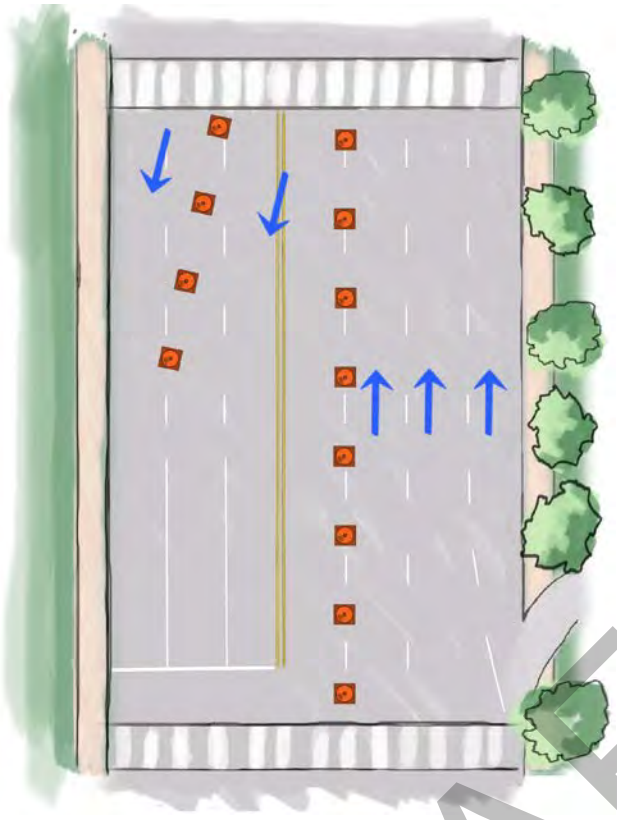
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING CONTRA-FLOW OPERATIONS
ATKINSON DRIVE – AM PEAK PERIOD

FIGURE
8



Atkinson Drive AM Peak Period Typical Section

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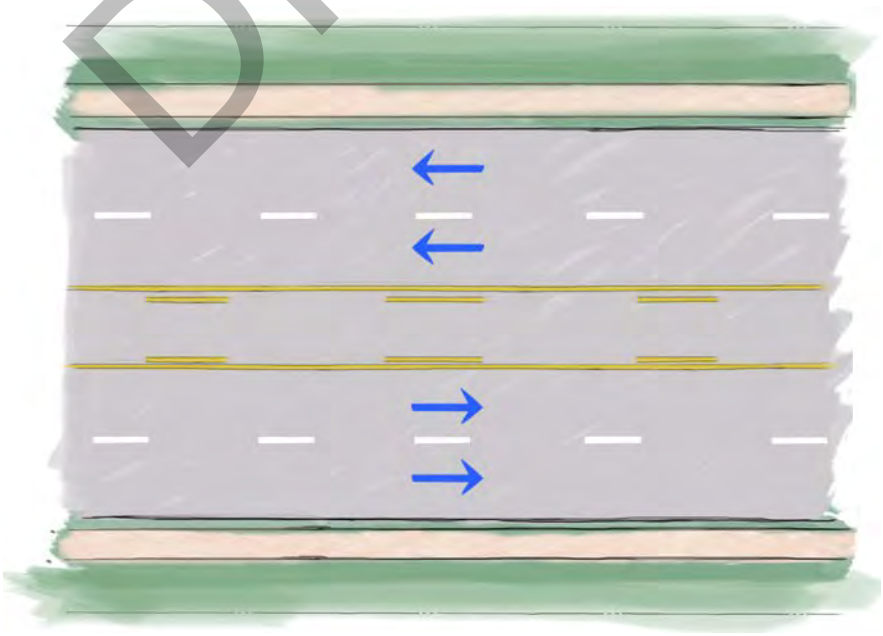
Dillingham Boulevard

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

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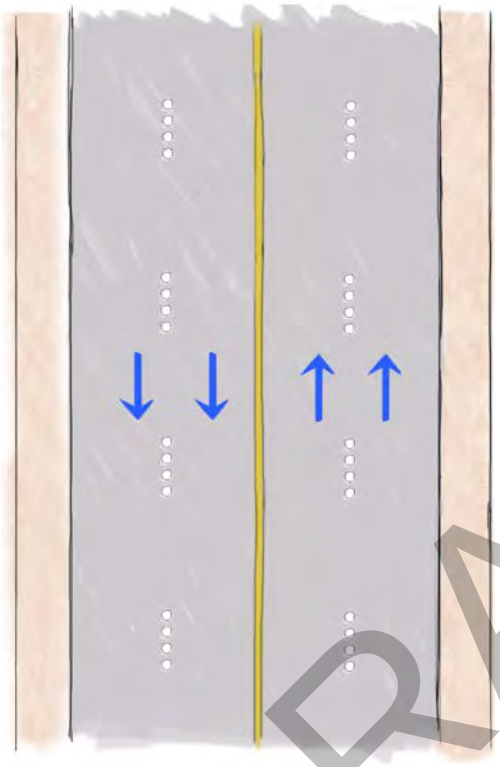
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

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

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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:

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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

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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%	**760** **52%**	**1,110** **57%**	830 43%
Cooke Rd to Ward Ave	610 32%	**1,320** **68%**	**1,280** **50%**	1,260 50%
Ward Ave to Kamakee St	670 30%	**1,600** **70%**	**1,620** **58%**	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 %)

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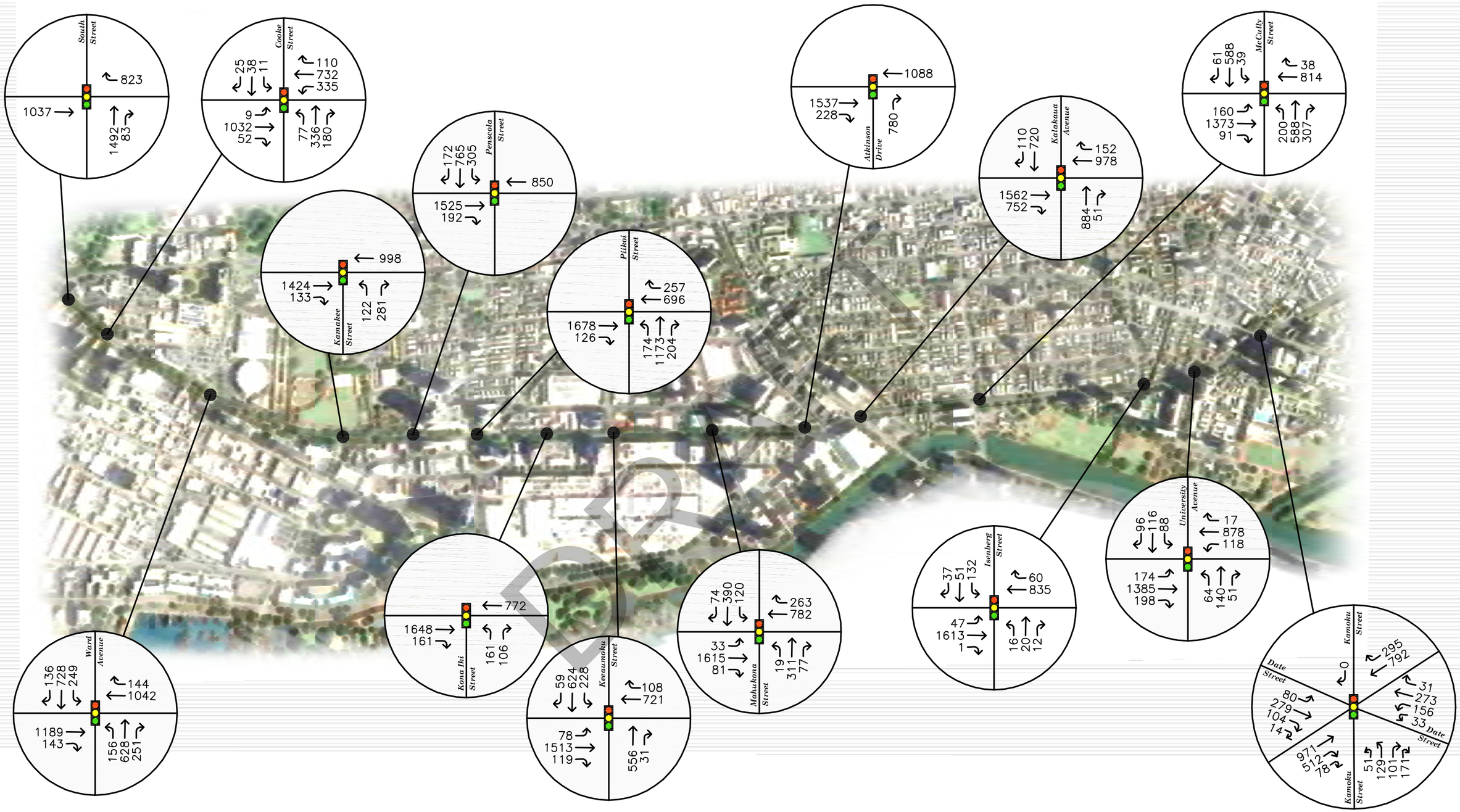
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC
KAPIOLANI BOULEVARD

FIGURE
11



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

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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%	**1,030** **64%**	**1,280** **72%**	490 28%
Kinau St to Beretania St	390 25%	**1,180** **75%**	**940** **54%**	790 46%
Beretania St to Hotel St	380 26%	**1,110** **74%**	710 42%	**970** **58%**
Hotel St to King St	370 31%	**810** **69%**	610 40%	**920** **60%**
King St to Kapiolani Blvd	500 35%	**910** **65%**	720 40%	**1,060** **60%**
South of Kapiolani Blvd	500 31%	**1,130** **69%**	**1,040** **54%**	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 %)

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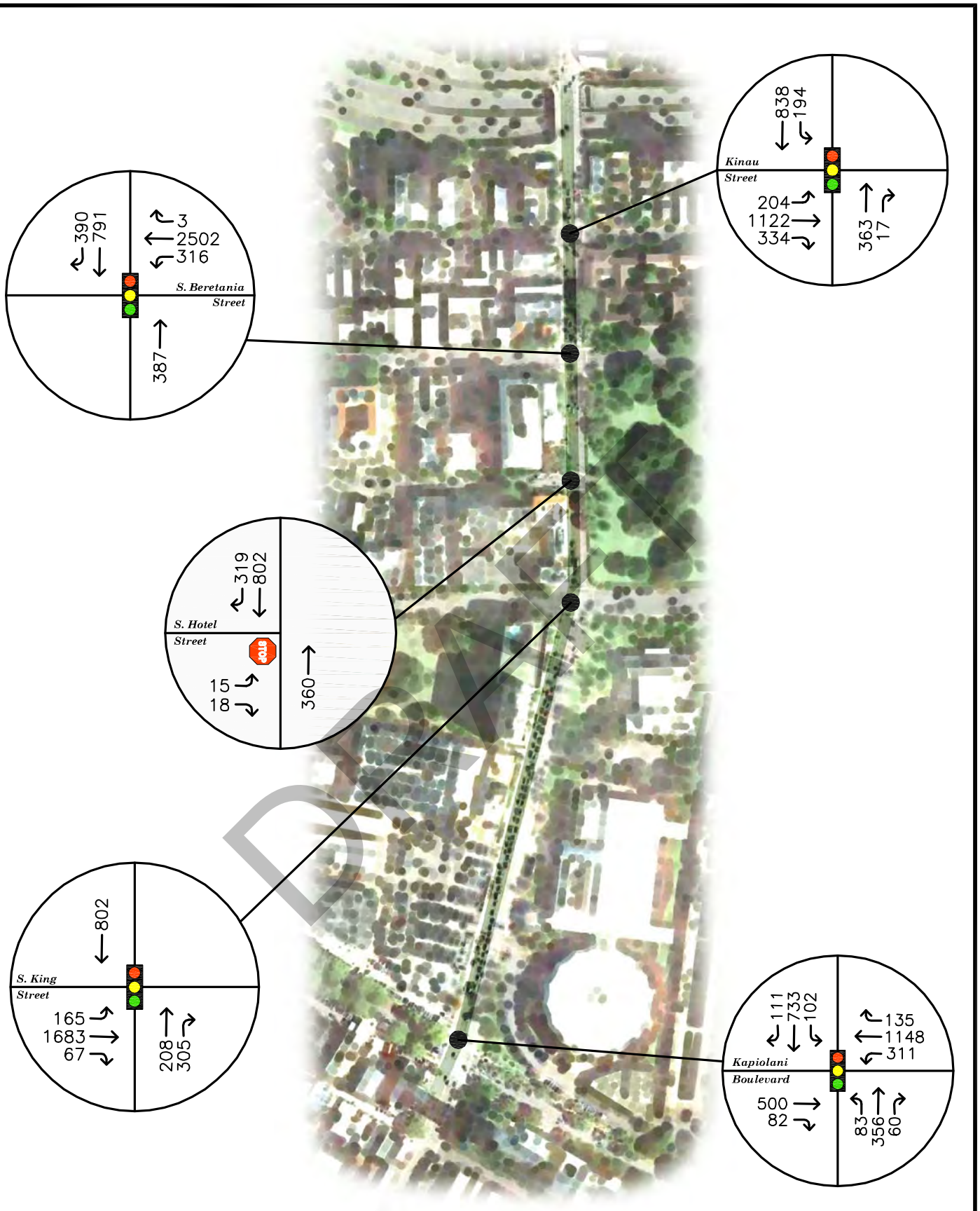
An assessment of the directional splits along that Ward Avenue during the peak periods indicates an approximately 30%/70% split in the northbound/southbound directions during the AM peak period. During the PM peak period, the predominant direction of traffic seems to be away from South Beretania Street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



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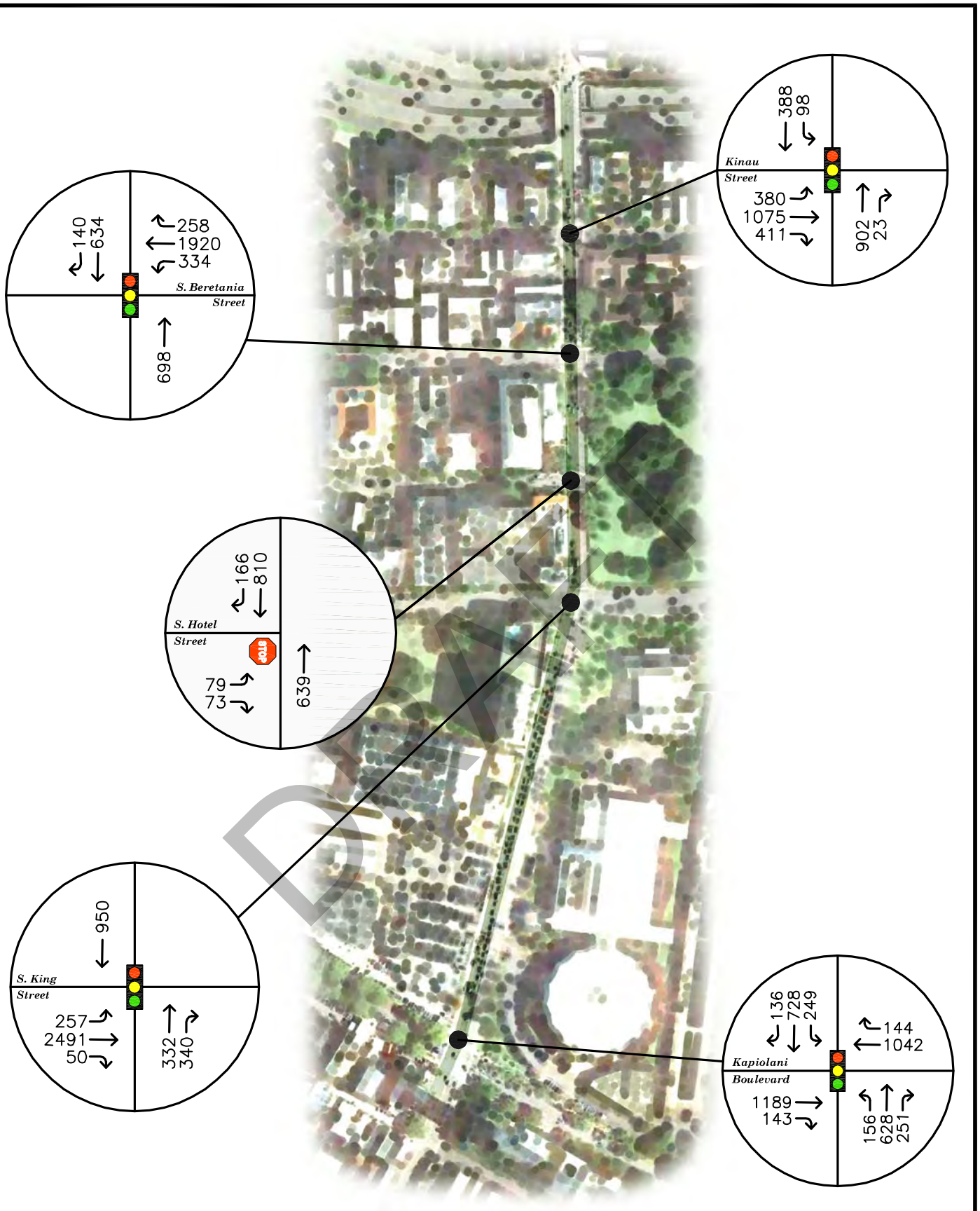
CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

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

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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%	**1,130** **79%**	**800** **72%**	310 28%
Kahakai St to Kona St	320 21%	**1,230** **79%**	**740** **59%**	520 41%
Kona St to Mahukona St	390 27%	**1,030** **73%**	**850** **65%**	450 35%
Mahukona St to Ala Moana Blvd	420 33%	**870** **67%**	**750** **56%**	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.

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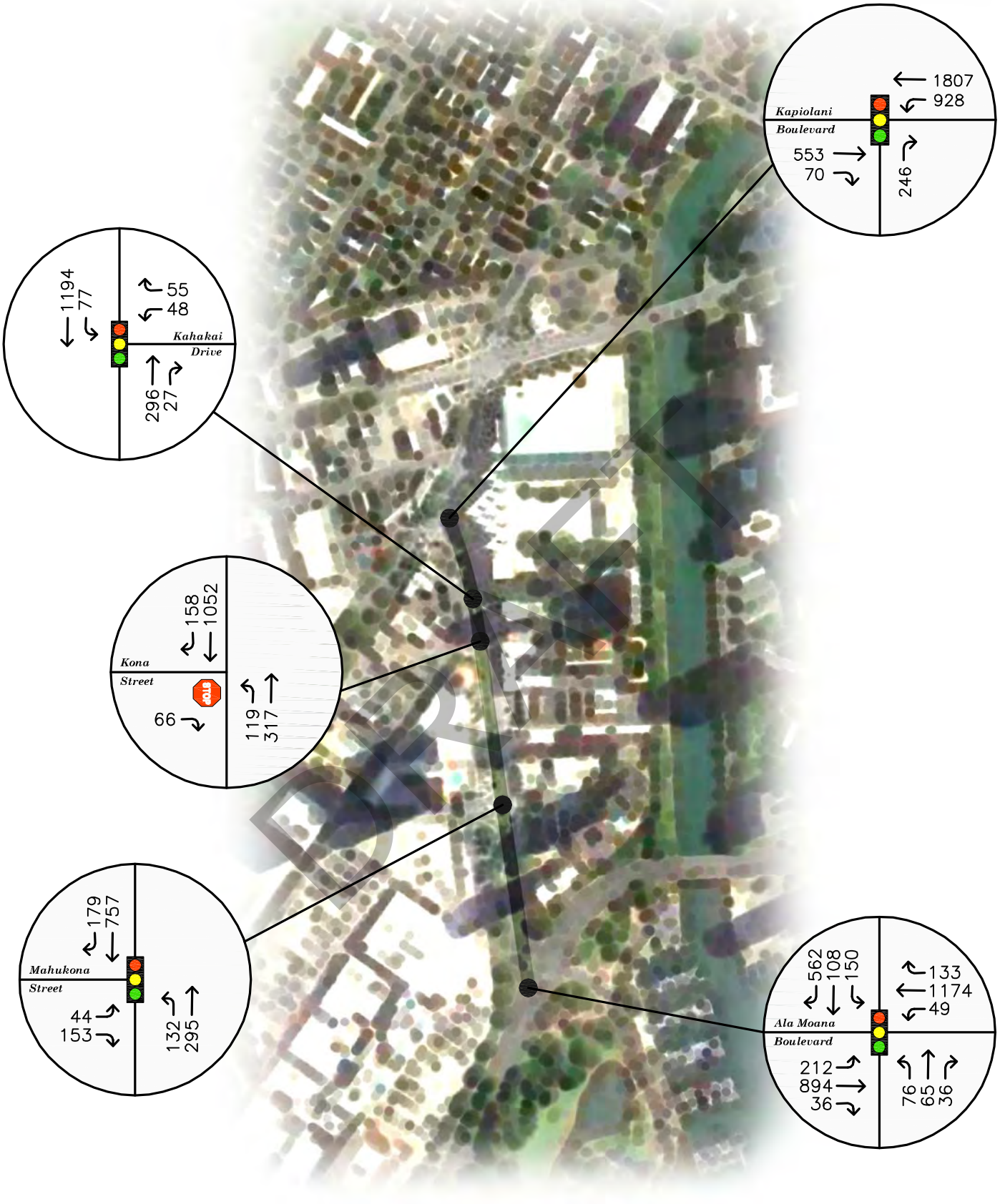

CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC
ATKINSON DRIVE

FIGURE
15

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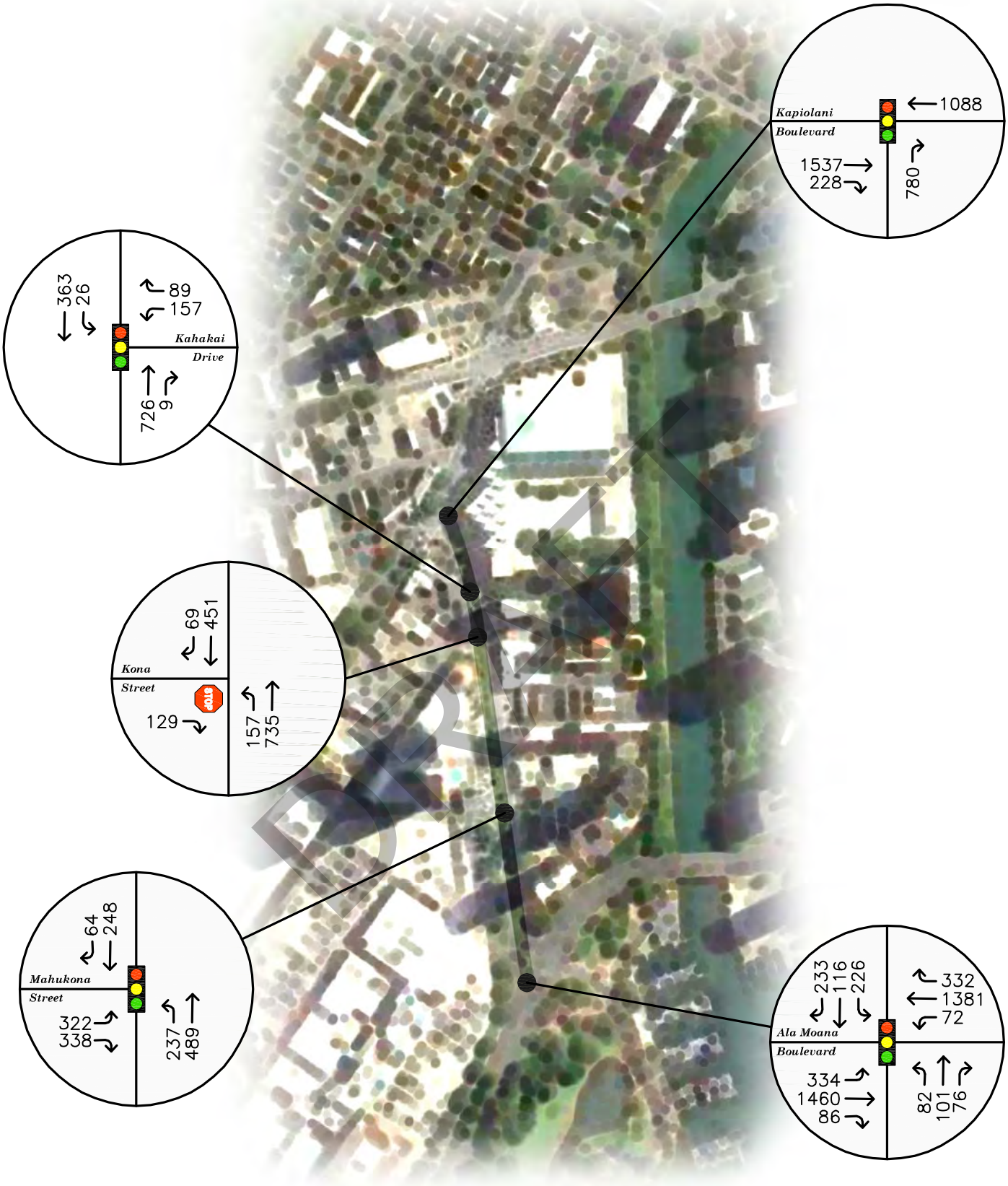

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CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING PM PEAK HOUR OF TRAFFIC
ATKINSON DRIVE

FIGURE 16

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CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC
DILLINGHAM BOULEVARD

FIGURE
17

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CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING PM PEAK HOUR OF TRAFFIC
DILLINGHAM BOULEVARD

FIGURE
18

Table 4: Dillingham Boulevard Traffic Volumes

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

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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	**990** **66%**	520 34%	**1,550** **82%**	340 18%
Beckley St to King St	**720** **56%**	570 46%	**1,330** **79%**	350 21%
King St to Kaumualii St	430 47%	**490** **53%**	**820** **71%**	340 29%
Kaumualii St to Dillingham Blvd	400 48%	**440** **52%**	**850** **71%**	350 29%
Dillingham Blvd to Nimitz Hwy	270 34%	**530** **66%**	**510** **59%**	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.

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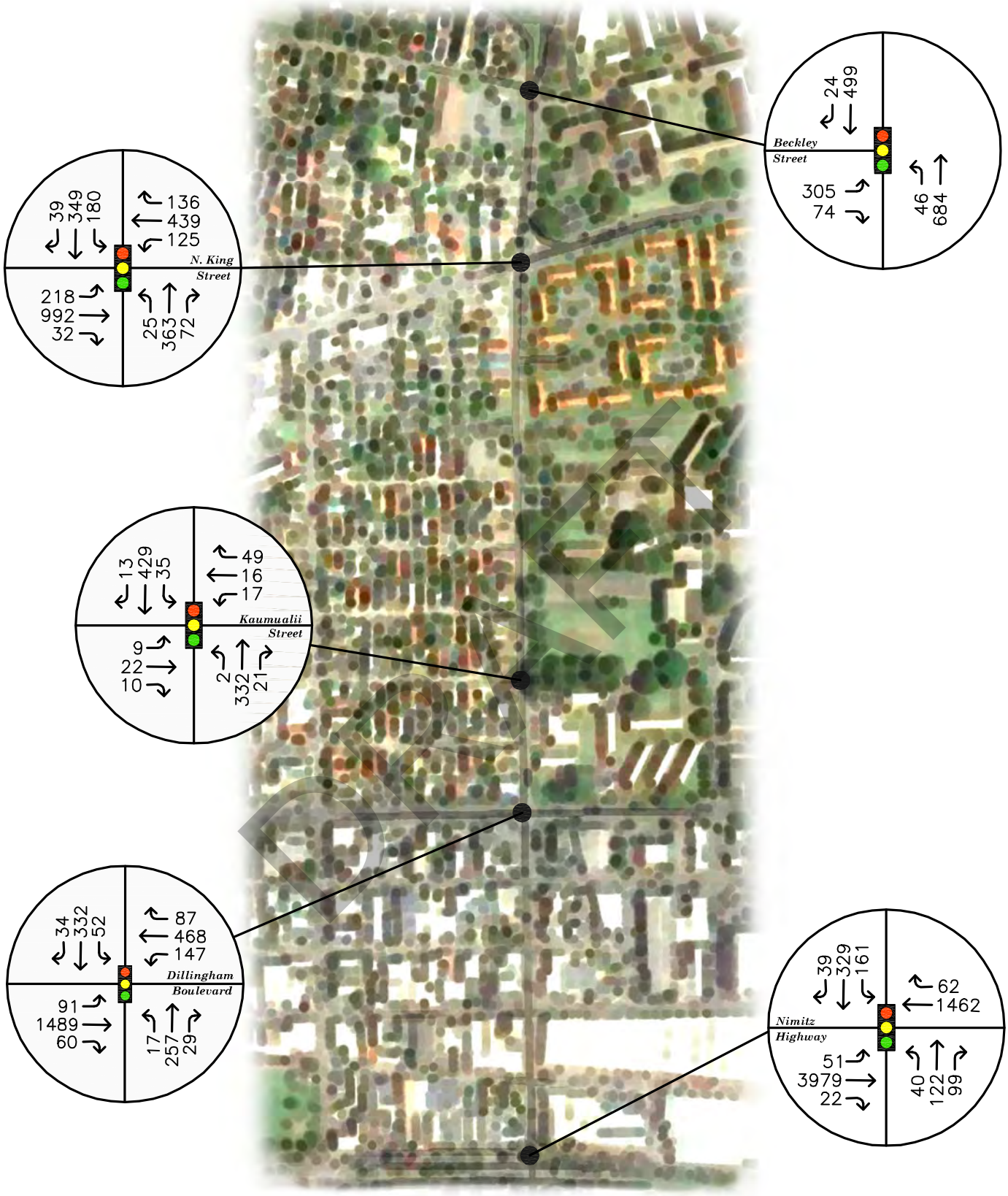

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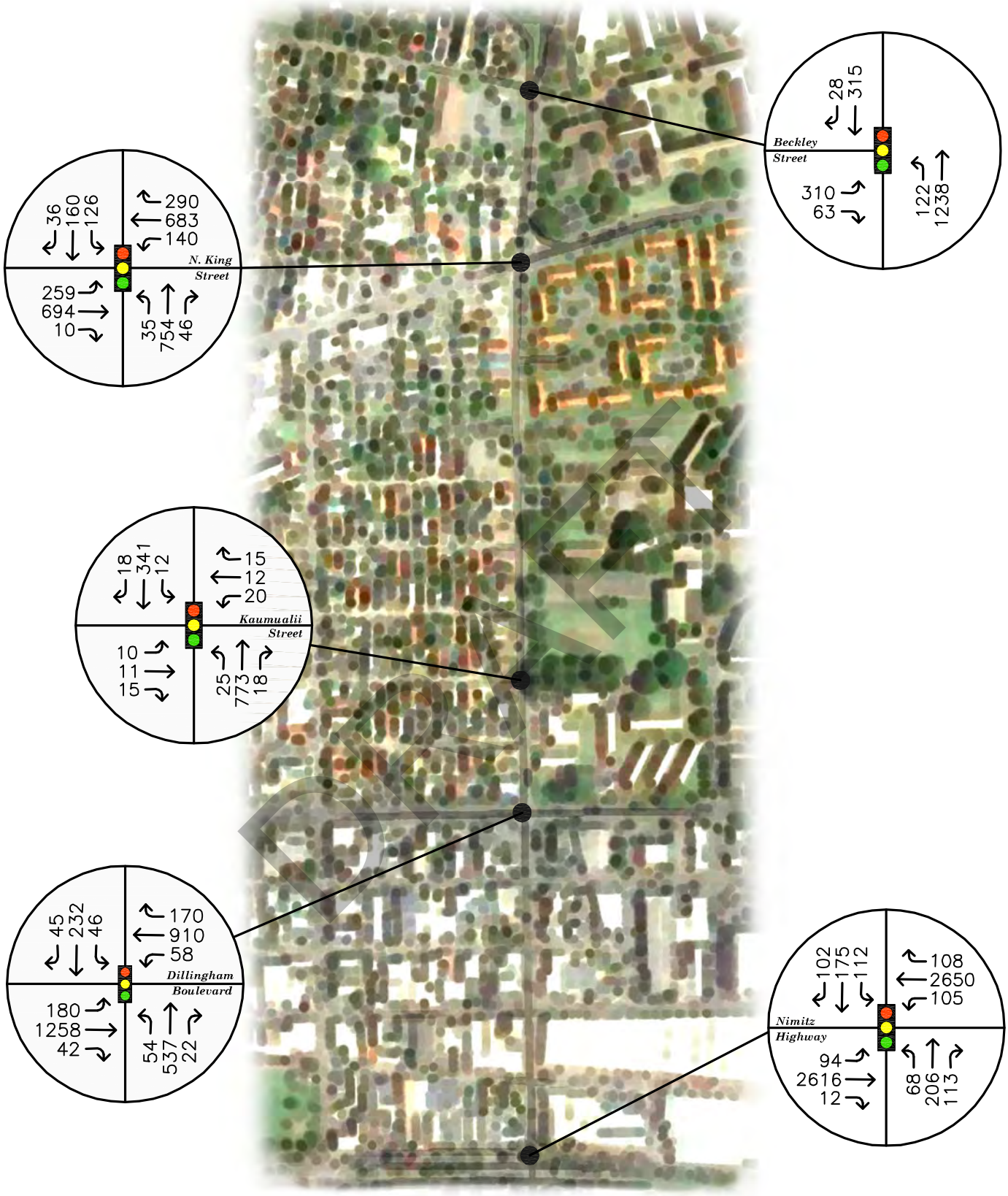
WILSON OKAMOTO CORPORATION

CITY AND COUNTY OF HONOLULU CONTRA-FLOW OPERATIONS

EXISTING AM PEAK HOUR OF TRAFFIC
KALIHI STREET

FIGURE 19



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WILSON OKAMOTO CORPORATION

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

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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

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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

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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.

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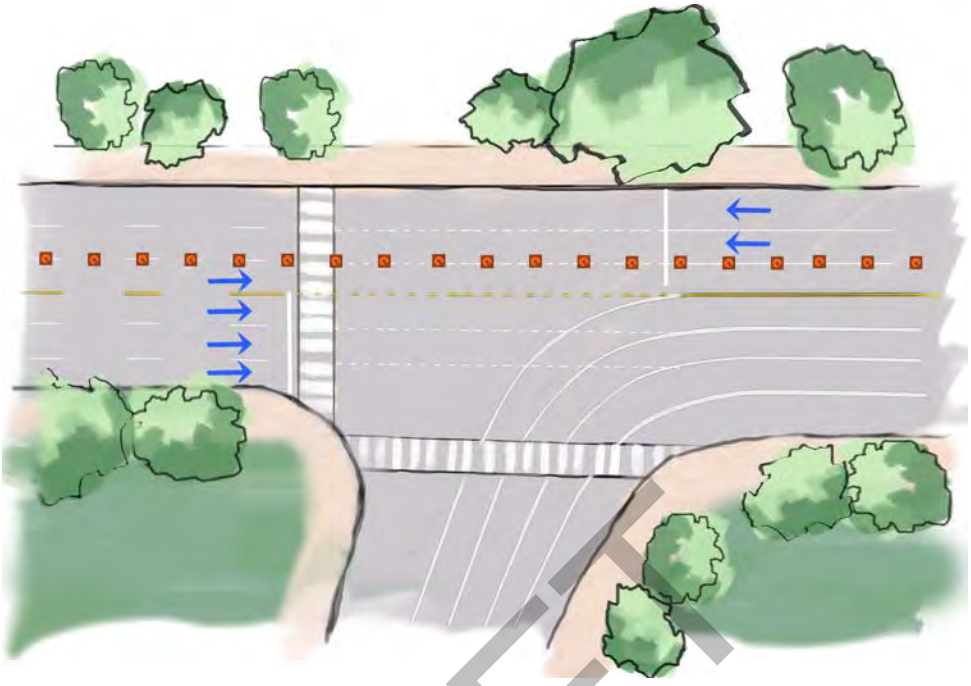
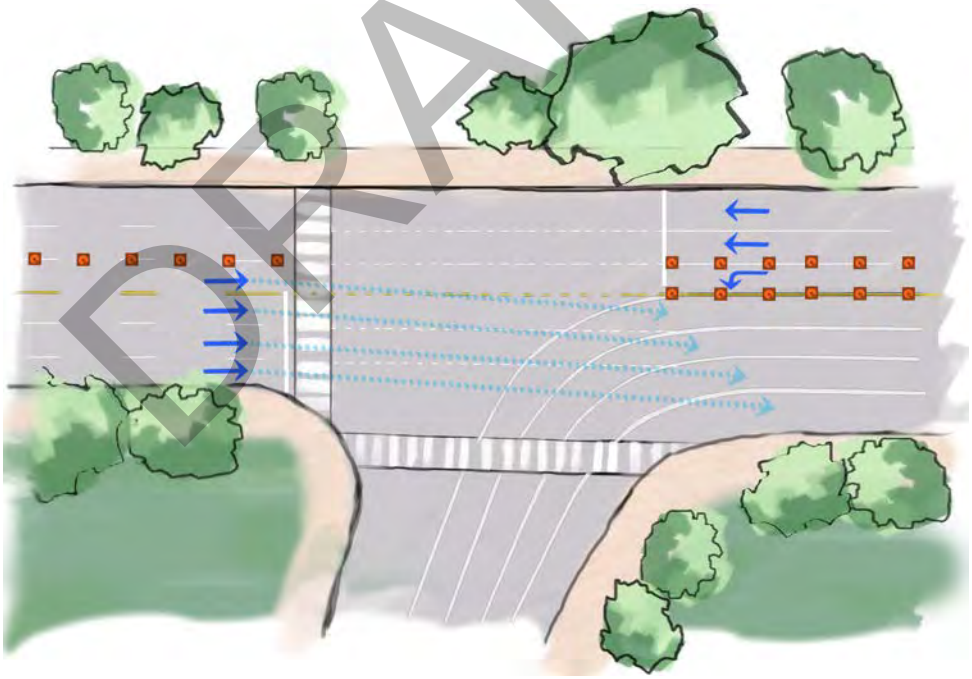


Kapiolani Boulevard and Atkinson Drive PM Peak Period Typical Intersection Configuration



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

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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

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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

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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.

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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

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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.

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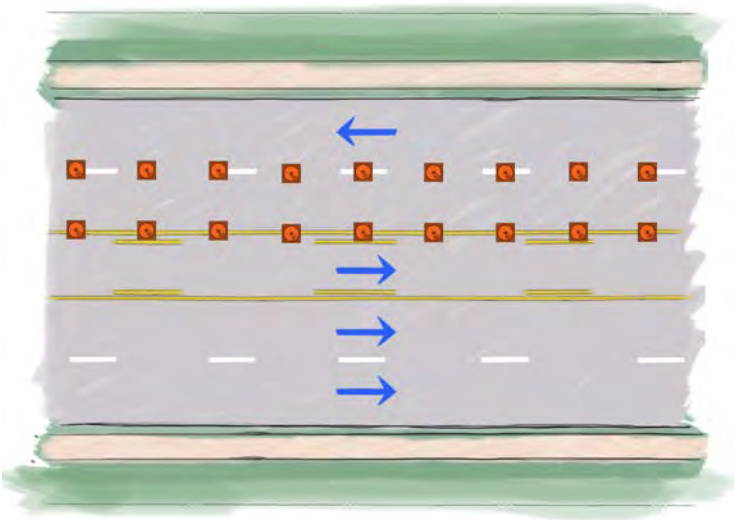
In addition, consideration was given to the implementation of contra-flow operations during the PM peak period. The directional split along Atkinson Drive during the PM peak period is an approximately 70%/30% split. As such, if contra-flow operations were implemented along this roadway during the PM 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

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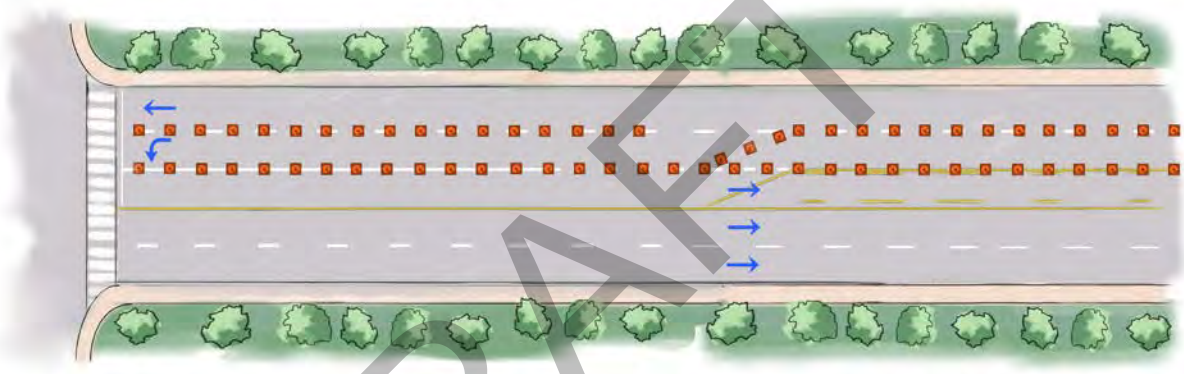
The existing median along the roadway could be utilized for the third eastbound travel lane with the inner westbound lane used to provide exclusive left-turn lanes at intersections (see typical section above). Left-turn traffic movements would be restricted along this section of Dillingham Boulevard 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/Puuhale 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;

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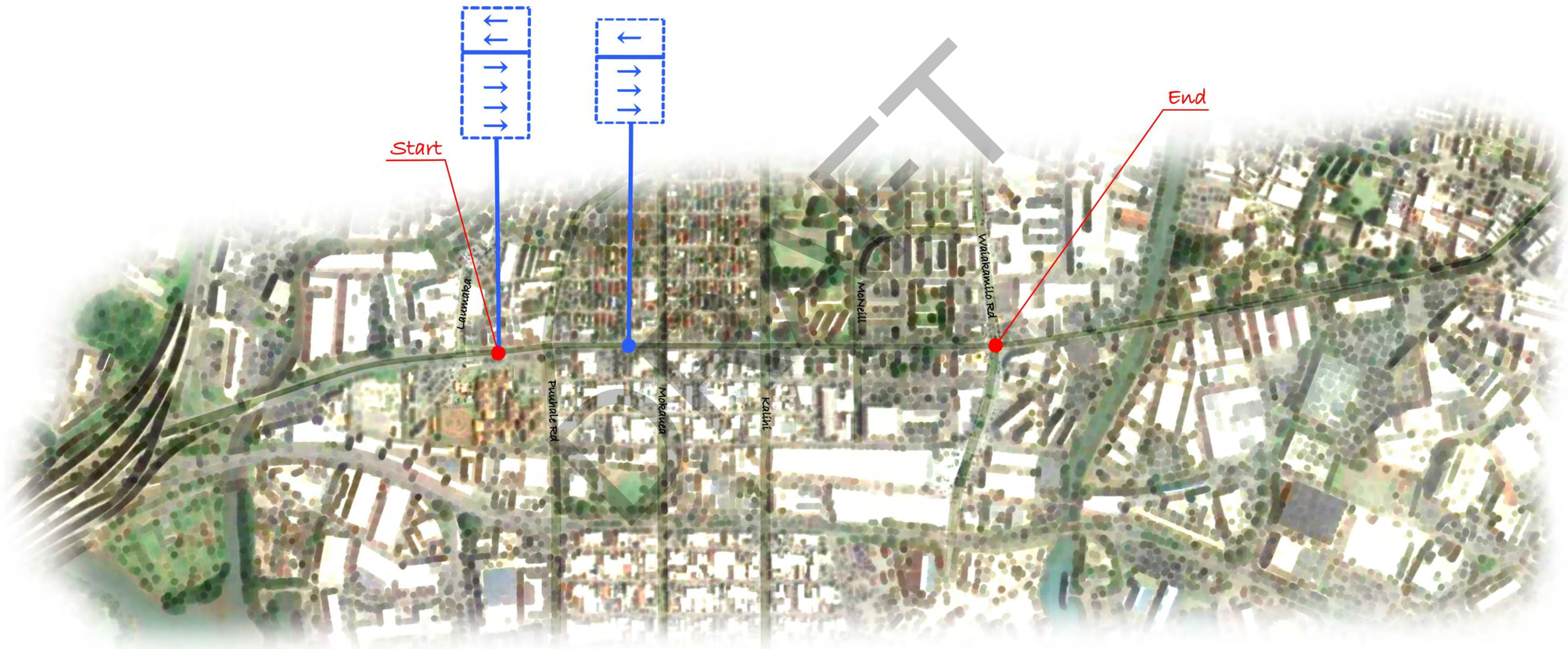

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WILSON OKAMOTO CORPORATION

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.

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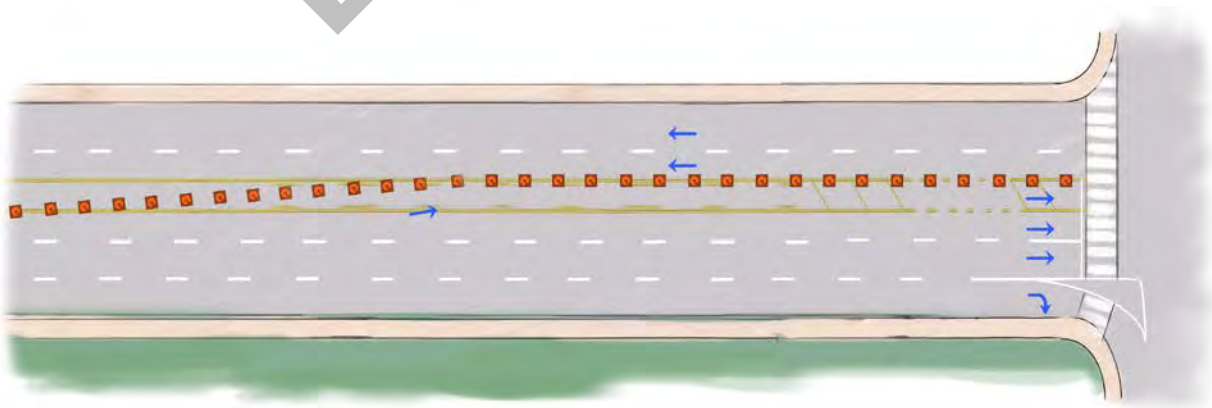
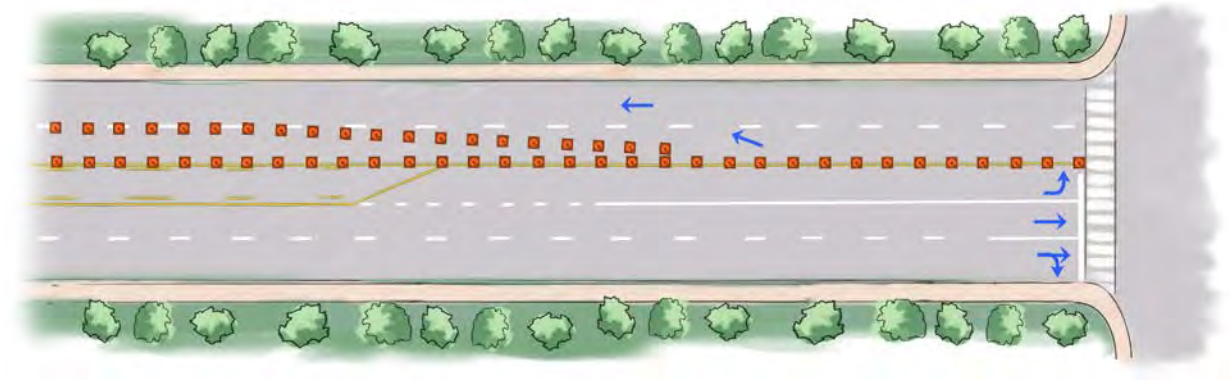


AM Peak Period Laneage Transition Near Puuhale Road



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.

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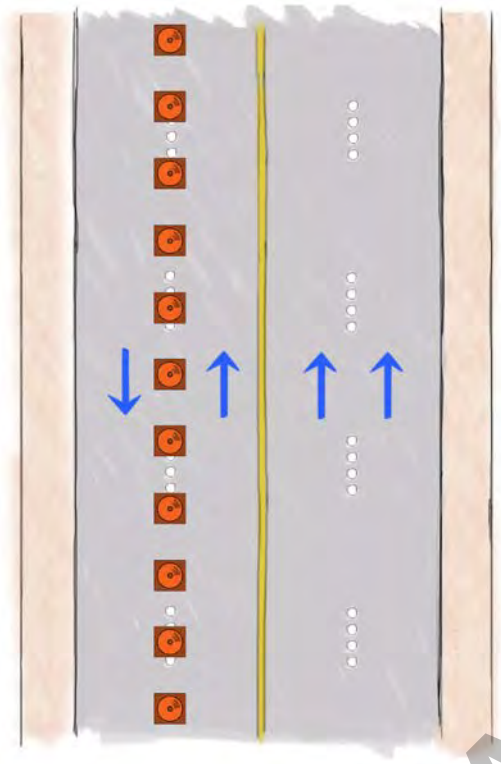

Kalihi Street PM Peak Period Typical Section

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.

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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,

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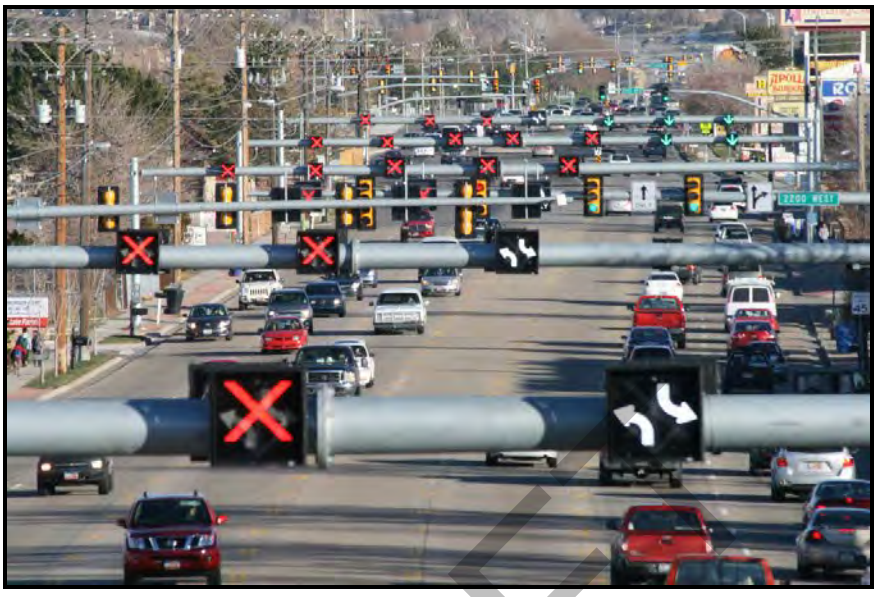
most likely on mast arms spanning the roadway width, sufficiently far in advance of or beyond the any existing traffic signals (see image below).



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.

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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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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

	Southbound	Kapiolani Boulevard Westbound					South Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	197
06:15 AM	0	0	0	50	4	54	0	68	8	9	85	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	331
06:45 AM	0	0	0	116	12	128	0	134	5	10	149	0	156	0	10	166	443
Total	0	0	0	328	31	359	0	359	23	39	421	0	385	0	38	423	1203
07:00 AM	0	0	0	167	15	182	0	178	4	9	191	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	510
07:30 AM	0	0	0	243	18	261	0	167	7	18	192	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	565
Total	0	0	0	773	74	847	0	610	22	68	700	0	593	0	60	653	2200
08:00 AM	0	0	0	170	18	188	0	148	16	14	178	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	556
08:30 AM	0	0	0	144	12	156	0	135	3	13	151	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	415
Total	0	0	0	604	62	666	0	559	28	53	640	0	701	0	21	722	2028
Grand Total	0	0	0	1705	167	1872	0	1528	73	160	1761	0	1679	0	119	1798	5431
Apprch %		0	0	91.1	8.9		0	86.8	4.1	9.1		0	93.4	0	6.6		
Total %	0	0	0	31.4	3.1	34.5	0	28.1	1.3	2.9	32.4	0	30.9	0	2.2	33.1	

	Southbound	Kapiolani Boulevard Westbound				South Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM														
07:30 AM	0	0	0	**243**	**243**	0	**167**	7	**174**	0	152	0	152	**569**
07:45 AM	0	0	0	197	197	0	128	6	134	0	175	0	175	506
08:00 AM	0	0	0	170	170	0	148	**16**	164	0	194	0	194	528
08:15 AM	0	0	0	168	168	0	143	7	150	0	**206**	0	**206**	524
Total Volume	0	0	0	778	778	0	586	36	622	0	727	0	727	2127
% App. Total		0	0	100		0	94.2	5.8		0	100	0		
PHF	.000	.000	.000	.800	.800	.000	.877	.563	.894	.000	.882	.000	.882	.935

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Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Southbound	Kapiolani Boulevard Westbound					South Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	0	164	8	172	0	216	14	7	237	0	173	0	16	189	598
03:15 PM	0	0	0	153	15	168	0	222	23	18	263	0	135	0	13	148	579
03:30 PM	0	0	0	221	11	232	0	255	24	9	288	0	216	0	16	232	752
03:45 PM	0	0	0	181	10	191	0	269	23	11	303	0	197	0	15	212	706
Total	0	0	0	719	44	763	0	962	84	45	1091	0	721	0	60	781	2635
04:00 PM	0	0	0	201	9	210	0	279	25	7	311	0	235	0	17	252	773
04:15 PM	0	0	0	182	12	194	0	295	19	1	315	0	191	0	14	205	714
04:30 PM	0	0	0	246	16	262	0	364	16	0	380	0	221	0	29	250	892
04:45 PM	0	0	0	193	10	203	0	351	21	2	374	0	251	0	18	269	846
Total	0	0	0	822	47	869	0	1289	81	10	1380	0	898	0	78	976	3225
05:00 PM	0	0	0	209	9	218	0	383	20	6	409	0	306	0	19	325	952
05:15 PM	0	0	0	175	6	181	0	394	26	2	422	0	259	0	14	273	876
05:30 PM	0	0	0	194	5	199	0	314	17	4	335	0	264	0	16	280	814
05:45 PM	0	0	0	154	8	162	0	277	24	4	305	0	227	0	15	242	709
Total	0	0	0	732	28	760	0	1368	87	16	1471	0	1056	0	64	1120	3351
Grand Total	0	0	0	2273	119	2392	0	3619	252	71	3942	0	2675	0	202	2877	9211
Apprch %		0	0	95	5		0	91.8	6.4	1.8		0	93	0	7		
Total %	0	0	0	24.7	1.3	26	0	39.3	2.7	0.8	42.8	0	29	0	2.2	31.2	

	Southbound	Kapiolani Boulevard Westbound				South Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:30 PM	0	0	0	**246**	**246**	0	364	16	380	0	221	0	221	847
04:45 PM	0	0	0	193	193	0	351	21	372	0	251	0	251	816
05:00 PM	0	0	0	209	209	0	383	20	403	0	**306**	0	**306**	**918**
05:15 PM	0	0	0	175	175	0	**394**	**26**	**420**	0	259	0	259	854
Total Volume	0	0	0	823	823	0	1492	83	1575	0	1037	0	1037	3435
% App. Total		0	0	100		0	94.7	5.3		0	100	0		
PHF	.000	.000	.000	.836	.836	.000	.947	.798	.938	.000	.847	.000	.847	.935

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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

	Cooke Street Southbound					Kapiolani Boulevard Westbound					Cooke Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
06:00 AM	0	2	0	5	7	25	60	17	9	111	5	10	3	6	24	0	57	8	5	70	212
06:15 AM	0	4	0	5	9	28	49	15	7	99	3	11	5	11	30	0	75	9	10	94	232
06:30 AM	0	5	2	12	19	73	84	27	8	192	6	19	5	5	35	0	97	6	8	111	357
06:45 AM	0	4	7	13	24	72	109	39	10	230	5	31	8	6	50	0	134	20	11	165	469
Total	0	15	9	35	59	198	302	98	34	632	19	71	21	28	139	0	363	43	34	440	1270
07:00 AM	0	3	4	8	15	103	152	35	6	296	4	39	8	13	64	0	117	8	17	142	517
07:15 AM	0	7	2	4	13	113	180	38	7	338	3	43	8	23	77	0	139	15	22	176	604
07:30 AM	1	13	3	21	38	96	213	45	7	361	7	41	11	14	73	0	143	14	19	176	648
07:45 AM	0	4	1	17	22	120	172	50	17	359	5	35	8	18	66	0	141	26	15	182	629
Total	1	27	10	50	88	432	717	168	37	1354	19	158	35	68	280	0	540	63	73	676	2398
08:00 AM	1	2	4	12	19	96	139	40	18	293	12	47	12	14	85	0	171	28	15	214	611
08:15 AM	0	5	6	8	19	82	157	29	11	279	12	36	7	14	69	0	171	22	16	209	576
08:30 AM	2	7	1	8	18	62	107	32	18	219	12	41	11	16	80	0	143	22	11	176	493
08:45 AM	0	11	2	10	23	64	117	25	15	221	6	44	15	10	75	0	123	17	4	144	463
Total	3	25	13	38	79	304	520	126	62	1012	42	168	45	54	309	0	608	89	46	743	2143
Grand Total	4	67	32	123	226	934	1539	392	133	2998	80	397	101	150	728	0	1511	195	153	1859	5811
Apprch %	1.8	29.6	14.2	54.4		31.2	51.3	13.1	4.4		11	54.5	13.9	20.6		0	81.3	10.5	8.2		
Total %	0.1	1.2	0.6	2.1	3.9	16.1	26.5	6.7	2.3	51.6	1.4	6.8	1.7	2.6	12.5	0	26	3.4	2.6	32	

	Cooke Street Southbound				Kapiolani Boulevard Westbound				Cooke Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
07:15 AM	0	7	2	9	113	180	38	331	3	43	8	54	0	139	15	154	548
07:30 AM	**1**	**13**	3	**17**	96	**213**	45	**354**	7	41	11	59	0	143	14	157	**587**
07:45 AM	0	4	1	5	**120**	172	**50**	342	5	35	8	48	0	141	26	167	562
08:00 AM	1	2	**4**	7	96	139	40	275	**12**	**47**	**12**	**71**	0	**171**	**28**	**199**	552
Total Volume	2	26	10	38	425	704	173	1302	27	166	39	232	0	594	83	677	2249
% App. Total	5.3	68.4	26.3		32.6	54.1	13.3		11.6	71.6	16.8		0	87.7	12.3		
PHF	.500	.500	.625	.559	.885	.826	.865	.919	.563	.883	.813	.817	.000	.868	.741	.851	.958

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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

	Cooke Street Southbound					Kapiolani Boulevard Westbound					Cooke Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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
Apprch %	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	

	Cooke Street Southbound				Kapiolani Boulevard Westbound				Cooke Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	3	**13**	**10**	**26**	**88**	**189**	33	**310**	17	89	**54**	160	1	207	13	221	717
04:45 PM	0	10	5	15	79	177	18	274	14	87	39	140	1	280	11	292	721
05:00 PM	**5**	7	4	16	87	160	**34**	281	**23**	**93**	46	**162**	**4**	248	**16**	268	**727**
05:15 PM	3	8	6	17	81	156	25	262	23	67	41	131	3	**297**	12	**312**	722
Total Volume	11	38	25	74	335	682	110	1127	77	336	180	593	9	1032	52	1093	2887
% App. Total	14.9	51.4	33.8		29.7	60.5	9.8		13	56.7	30.4		0.8	94.4	4.8		
PHF	.550	.731	.625	.712	.952	.902	.809	.909	.837	.903	.833	.915	.563	.869	.813	.876	.993

DRAFT

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

	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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
06:15 AM	18	96	13	10	137	35	91	11	13	150	21	35	5	7	68	0	63	15	4	82	437
06:30 AM	28	133	15	10	186	53	132	16	8	209	26	48	4	5	83	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	86	13	9	108	794
Total	96	452	61	48	657	188	558	57	51	854	90	168	24	34	316	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
07:15 AM	22	149	22	13	206	67	354	28	17	466	22	106	10	13	151	0	138	23	9	170	993
07:30 AM	23	190	35	19	267	77	334	40	19	470	25	116	19	12	172	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	137	24	6	167	984
Total	94	692	119	49	954	315	1253	125	66	1759	103	383	60	36	582	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
08:15 AM	28	176	32	7	243	80	269	23	16	388	30	75	21	9	135	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
08:45 AM	23	145	40	9	217	66	154	20	13	253	27	63	11	7	108	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
Grand Total	314	1822	299	134	2569	794	2717	272	165	3948	306	824	145	97	1372	0	1211	251	99	1561	9450
Apprch %	12.2	70.9	11.6	5.2		20.1	68.8	6.9	4.2		22.3	60.1	10.6	7.1		0	77.6	16.1	6.3		
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	

DRAFT

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

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

	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
03:00 PM	43	140	30	6	219	39	194	31	15	279	33	145	50	10	238	0	160	38	18	216	952
03:15 PM	33	150	28	2	213	0	224	45	15	284	31	144	52	16	243	0	171	39	12	222	962
03:30 PM	48	149	36	13	246	4	230	51	32	317	36	171	49	15	271	0	191	25	8	224	1058
03:45 PM	52	149	19	8	228	0	266	46	29	341	32	143	51	34	260	0	230	30	8	268	1097
Total	176	588	113	29	906	43	914	173	91	1221	132	603	202	75	1012	0	752	132	46	930	4069
04:00 PM	52	176	30	19	277	2	235	42	34	313	48	168	65	33	314	0	215	26	24	265	1169
04:15 PM	47	155	17	13	232	0	241	38	35	314	46	156	53	37	292	0	212	28	18	258	1096
04:30 PM	59	171	40	24	294	1	251	34	47	333	45	147	58	31	281	0	280	30	15	325	1233
04:45 PM	60	196	17	18	291	0	270	26	42	338	40	156	60	26	282	0	289	33	16	338	1249
Total	218	698	104	74	1094	3	997	140	158	1298	179	627	236	127	1169	0	996	117	73	1186	4747
05:00 PM	68	177	39	23	307	0	246	49	76	371	27	158	62	57	304	0	356	46	30	432	1414
05:15 PM	62	184	40	20	306	7	275	35	45	362	44	167	71	31	313	0	264	34	18	316	1297
05:30 PM	57	155	38	3	253	66	141	37	43	287	38	163	51	11	263	0	231	36	23	290	1093
05:45 PM	58	185	25	13	281	73	167	31	41	312	30	196	36	38	300	0	316	36	15	367	1260
Total	245	701	142	59	1147	146	829	152	205	1332	139	684	220	137	1180	0	1167	152	86	1405	5064
Grand Total	639	1987	359	162	3147	192	2740	465	454	3851	450	1914	658	339	3361	0	2915	401	205	3521	13880
Apprch %	20.3	63.1	11.4	5.1		5	71.2	12.1	11.8		13.4	56.9	19.6	10.1		0	82.8	11.4	5.8		
Total %	4.6	14.3	2.6	1.2	22.7	1.4	19.7	3.4	3.3	27.7	3.2	13.8	4.7	2.4	24.2	0	21	2.9	1.5	25.4	

	Ward Avenue Southbound				Kapiolani Boulevard Westbound				Ward Avenue Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	59	171	**40**	270	1	251	34	286	**45**	147	58	250	0	280	30	310	1116
04:45 PM	60	**196**	17	273	0	270	26	296	40	156	60	256	0	289	33	322	1147
05:00 PM	**68**	177	39	284	0	246	**49**	295	27	158	62	247	0	**356**	**46**	**402**	**1228**
05:15 PM	62	184	40	**286**	**7**	**275**	35	**317**	44	**167**	**71**	**282**	0	264	34	298	1183
Total Volume	249	728	136	1113	8	1042	144	1194	156	628	251	1035	0	1189	143	1332	4674
% App. Total	22.4	65.4	12.2		0.7	87.3	12.1		15.1	60.7	24.3		0	89.3	10.7		
PHF	.915	.929	.850	.973	.286	.947	.735	.942	.867	.940	.884	.918	.000	.835	.777	.828	.952

DRAFT

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

	Southbound	Kapiolani Boulevard Westbound					Kamakee Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	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
Total	0	122	870	0	4	996	47	0	39	28	114	0	313	42	39	394	1504
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
Total	0	218	1506	0	8	1732	60	0	67	33	160	0	564	61	192	817	2709
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	666
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
Total	0	232	1215	0	13	1460	61	0	102	36	199	0	638	87	111	836	2495
Grand Total	0	572	3591	0	25	4188	168	0	208	97	473	0	1515	190	342	2047	6708
Apprch %		13.7	85.7	0	0.6		35.5	0	44	20.5		0	74	9.3	16.7		
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	

	Southbound	Kapiolani Boulevard Westbound				Kamakee Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM														
07:15 AM	0	47	403	0	450	11	0	22	33	0	133	10	143	626
07:30 AM	0	60	402	0	462	20	0	15	35	0	157	14	171	668
07:45 AM	0	60	382	0	442	13	0	15	28	0	159	23	182	652
08:00 AM	0	63	391	0	454	12	0	14	26	0	165	17	182	662
Total Volume	0	230	1578	0	1808	56	0	66	122	0	614	64	678	2608
% App. Total		12.7	87.3	0		45.9	0	54.1		0	90.6	9.4		
PHF	.000	.913	.979	.000	.978	.700	.000	.750	.871	.000	.930	.696	.931	.976

DRAFT

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

	Southbound	Kapiolani Boulevard Westbound					Waimanu Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	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
Total	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	57	11	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
Total	0	8	1082	0	29	1119	99	0	267	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
Total	0	94	817	0	18	929	120	0	274	87	481	0	1422	122	90	1634	3044
Grand Total	0	145	2715	0	59	2919	319	0	773	221	1313	0	3826	336	294	4456	8688
Apprch %		5	93	0	2		24.3	0	58.9	16.8		0	85.9	7.5	6.6		
Total %	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	

	Southbound	Kapiolani Boulevard Westbound				Waimanu Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:30 PM	0	2	243	0	245	32	0	57	89	0	323	29	352	686
04:45 PM	0	1	285	0	286	27	0	68	95	0	369	32	401	782
05:00 PM	0	2	232	0	234	36	0	100	136	0	364	28	392	762
05:15 PM	0	4	238	0	242	27	0	56	83	0	368	44	412	737
Total Volume	0	9	998	0	1007	122	0	281	403	0	1424	133	1557	2967
% App. Total		0.9	99.1	0		30.3	0	69.7		0	91.5	8.5		
PHF	.000	.563	.875	.000	.880	.847	.000	.703	.741	.000	.965	.756	.945	.949

DRAFT

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

Groups Printed- Unshifted

	Pensacola Street Southbound					Kapiolani Boulevard Westbound					Pensacola Street Northbound					Kapiolani Boulevard Eastbound					
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	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
Apprch %	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	

	Pensacola Street Southbound				Kapiolani Boulevard Westbound				Pensacola Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM																	
07:30 AM	50	160	67	277	25	393	0	418	0	0	0	0	0	131	32	163	858
07:45 AM	49	203	99	351	41	400	0	441	0	0	0	0	0	151	30	181	973
08:00 AM	70	203	131	404	33	307	0	340	0	0	0	0	0	154	32	186	930
08:15 AM	63	190	69	322	28	312	0	340	0	0	0	0	0	141	33	174	836
Total Volume	232	756	366	1354	127	1412	0	1539	0	0	0	0	0	577	127	704	3597
% App. Total	17.1	55.8	27		8.3	91.7	0		0	0	0		0	82	18		
PHF	.829	.931	.698	.838	.774	.883	.000	.872	.000	.000	.000	.000	.000	.937	.962	.946	.924

DRAFT

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

Groups Printed- Unshifted

	Pensacola Street Southbound					Kapiolani Boulevard Westbound					Pensacola Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
03:00 PM	82	213	57	17	369	19	151	0	0	170	0	0	0	26	26	0	231	35	11	277	842
03:15 PM	64	196	53	25	338	4	211	0	0	215	0	0	0	14	14	0	288	40	18	346	913
03:30 PM	59	191	62	21	333	9	180	0	0	189	0	0	0	19	19	0	261	40	29	330	871
03:45 PM	80	195	50	18	343	2	167	0	0	169	0	0	0	27	27	0	303	46	12	361	900
Total	285	795	222	81	1383	34	709	0	0	743	0	0	0	86	86	0	1083	161	70	1314	3526
04:00 PM	72	196	51	13	332	5	174	0	0	179	0	0	0	23	23	0	315	55	4	374	908
04:15 PM	60	181	33	21	295	1	207	0	0	208	0	0	0	23	23	0	378	47	18	443	969
04:30 PM	83	198	36	28	345	2	172	0	0	174	0	0	0	14	14	0	399	37	15	451	984
04:45 PM	77	194	36	20	327	3	195	0	0	198	0	0	0	19	19	0	404	50	8	462	1006
Total	292	769	156	82	1299	11	748	0	0	759	0	0	0	79	79	0	1496	189	45	1730	3867
05:00 PM	78	187	52	37	354	2	214	0	0	216	0	0	0	21	21	0	419	54	10	483	1074
05:15 PM	67	186	48	35	336	2	209	0	0	211	0	0	0	27	27	0	403	51	17	471	1045
05:30 PM	62	191	40	16	309	13	151	0	0	164	0	0	0	28	28	0	350	44	3	397	898
05:45 PM	43	158	50	21	272	14	183	0	0	197	0	0	0	18	18	0	349	33	10	392	879
Total	250	722	190	109	1271	31	757	0	0	788	0	0	0	94	94	0	1521	182	40	1743	3896
Grand Total	827	2286	568	272	3953	76	2214	0	0	2290	0	0	0	259	259	0	4100	532	155	4787	11289
Apprch %	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	

	Pensacola Street Southbound				Kapiolani Boulevard Westbound				Pensacola Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	**83**	**198**	36	**317**	2	172	0	174	0	0	0	0	0	399	37	436	927
04:45 PM	77	194	36	307	**3**	195	0	198	0	0	0	0	0	404	50	454	959
05:00 PM	78	187	**52**	317	2	**214**	0	**216**	0	0	0	0	0	**419**	**54**	**473**	**1006**
05:15 PM	67	186	48	301	2	209	0	211	0	0	0	0	0	403	**51**	454	966
Total Volume	305	765	172	1242	9	790	0	799	0	0	0	0	0	1625	192	1817	3858
% App. Total	24.6	61.6	13.8		1.1	98.9	0		0	0	0		0	89.4	10.6		
PHF	.919	.966	.827	.979	.750	.923	.000	.925	.000	.000	.000	.000	.000	.970	.889	.960	.959

DRAFT

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

	Piikoi Street Southbound					Kapiolani Boulevard Westbound					Piikoi Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
06:00 AM	0	0	0	14	14	8	203	42	27	280	13	103	15	7	138	0	53	1	6	60	492
06:15 AM	0	0	0	11	11	6	202	14	22	244	1	73	8	8	90	0	69	7	7	83	428
06:30 AM	0	0	0	7	7	3	276	30	9	318	14	112	6	4	136	0	88	8	10	106	567
06:45 AM	0	0	0	7	7	9	408	40	14	471	8	121	11	6	146	0	135	1	15	151	775
Total	0	0	0	39	39	26	1089	126	72	1313	36	409	40	25	510	0	345	17	38	400	2262
07:00 AM	0	0	0	12	12	2	395	54	10	461	15	190	11	4	220	0	133	7	10	150	843
07:15 AM	0	0	0	7	7	7	506	54	11	578	11	187	14	4	216	0	175	16	22	213	1014
07:30 AM	0	0	0	7	7	15	520	56	12	603	21	197	16	5	239	0	206	13	20	239	1088
07:45 AM	0	0	0	5	5	11	463	50	22	546	10	187	7	8	212	0	193	16	12	221	984
Total	0	0	0	31	31	35	1884	214	55	2188	57	761	48	21	887	0	707	52	64	823	3929
08:00 AM	0	0	0	7	7	4	381	44	27	456	19	164	14	6	203	0	188	14	8	210	876
08:15 AM	0	0	0	7	7	4	320	46	30	400	13	156	17	6	192	0	208	19	10	237	836
08:30 AM	0	0	0	5	5	4	236	31	18	289	24	197	23	6	250	0	192	25	16	233	777
08:45 AM	0	0	0	7	7	9	205	38	27	279	23	199	20	7	249	0	213	11	17	241	776
Total	0	0	0	26	26	21	1142	159	102	1424	79	716	74	25	894	0	801	69	51	921	3265
Grand Total	0	0	0	96	96	82	4115	499	229	4925	172	1886	162	71	2291	0	1853	138	153	2144	9456
Apprch %	0	0	0	100		1.7	83.6	10.1	4.6		7.5	82.3	7.1	3.1		0	86.4	6.4	7.1		
Total %	0	0	0	1	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	

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Piikoi Street Southbound					Kapiolani Boulevard Westbound					Piikoi Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
03:00 PM	0	0	0	19	19	6	198	60	41	305	33	287	49	34	403	0	325	29	11	365	1092
03:15 PM	0	0	0	12	12	3	177	56	17	253	37	279	34	24	374	1	331	22	11	365	1004
03:30 PM	0	0	0	7	7	0	175	56	11	242	38	281	42	18	379	0	325	32	19	376	1004
03:45 PM	0	0	0	7	7	1	198	82	15	296	37	254	50	17	358	1	337	37	11	386	1047
Total	0	0	0	45	45	10	748	254	84	1096	145	1101	175	93	1514	2	1318	120	52	1492	4147
04:00 PM	0	0	0	12	12	2	165	60	34	261	34	281	37	19	371	0	430	27	15	472	1116
04:15 PM	0	0	1	14	15	0	216	52	29	297	38	279	52	22	391	0	369	24	15	408	1111
04:30 PM	0	0	0	16	16	0	198	63	31	292	42	310	55	23	430	0	483	38	24	545	1283
04:45 PM	0	0	0	6	6	1	183	65	30	279	49	263	50	33	395	0	467	22	20	509	1189
Total	0	0	1	48	49	3	762	240	124	1129	163	1133	194	97	1587	0	1749	111	74	1934	4699
05:00 PM	0	0	0	21	21	0	197	65	30	292	30	314	53	29	426	0	518	41	31	590	1329
05:15 PM	0	0	0	12	12	0	178	64	23	265	53	286	46	21	406	0	430	25	23	478	1161
05:30 PM	0	0	0	25	25	7	173	52	35	267	39	300	63	19	421	0	441	23	27	491	1204
05:45 PM	0	0	0	7	7	14	209	65	16	304	41	266	50	21	378	0	389	25	11	425	1114
Total	0	0	0	65	65	21	757	246	104	1128	163	1166	212	90	1631	0	1778	114	92	1984	4808
Grand Total	0	0	1	158	159	34	2267	740	312	3353	471	3400	581	280	4732	2	4845	345	218	5410	13654
Apprch %	0	0	0.6	99.4		1	67.6	22.1	9.3		10	71.9	12.3	5.9		0	89.6	6.4	4		
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	

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

DRAFT

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

	Southbound	Kapiolani Boulevard Westbound					Kona Iki Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	0	0	126	4	2	132	0	0	4	7	11	9	52	0	0	61	204
06:15 AM	0	0	213	7	3	223	2	0	5	5	12	11	69	0	0	80	315
06:30 AM	0	0	310	4	3	317	2	0	8	12	22	19	111	0	0	130	469
06:45 AM	0	0	483	11	8	502	2	0	12	9	23	13	114	0	0	127	652
Total	0	0	1132	26	16	1174	6	0	29	33	68	52	346	0	0	398	1640
07:00 AM	0	0	474	4	8	486	0	0	9	13	22	21	135	0	0	156	664
07:15 AM	0	0	549	6	5	560	7	0	10	20	37	23	143	0	0	166	763
07:30 AM	0	0	537	12	2	551	2	0	6	14	22	22	183	0	0	205	778
07:45 AM	0	0	508	9	10	527	4	0	10	17	31	18	159	0	0	177	735
Total	0	0	2068	31	25	2124	13	0	35	64	112	84	620	0	0	704	2940
08:00 AM	0	0	403	15	8	426	4	0	13	19	36	36	163	0	0	199	661
08:15 AM	0	0	318	13	5	336	4	0	8	26	38	24	189	0	0	213	587
08:30 AM	0	0	245	9	10	264	8	0	18	20	46	32	191	0	0	223	533
08:45 AM	0	0	208	20	8	236	11	0	13	22	46	29	210	0	0	239	521
Total	0	0	1174	57	31	1262	27	0	52	87	166	121	753	0	0	874	2302
Grand Total	0	0	4374	114	72	4560	46	0	116	184	346	257	1719	0	0	1976	6882
Apprch %		0	95.9	2.5	1.6		13.3	0	33.5	53.2		13	87	0	0		
Total %	0	0	63.6	1.7	1	66.3	0.7	0	1.7	2.7	5	3.7	25	0	0	28.7	

	Southbound	Kapiolani Boulevard Westbound				Kona Iki Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	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 07:00 AM														
07:00 AM	0	0	474	4	478	0	0	9	9	21	135	0	156	643
07:15 AM	0	0	**549**	6	**555**	7	0	**10**	**17**	**23**	143	0	166	738
07:30 AM	0	0	537	**12**	549	2	0	6	8	22	**183**	0	**205**	**762**
07:45 AM	0	0	508	9	517	4	0	10	14	18	159	0	177	708
Total Volume	0	0	2068	31	2099	13	0	35	48	84	620	0	704	2851
% App. Total		0	98.5	1.5		27.1	0	72.9		11.9	88.1	0		
PHF	.000	.000	.942	.646	.945	.464	.000	.875	.706	.913	.847	.000	.859	.935

DRAFT

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

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

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

DRAFT

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
Site Code : 00000001
Start Date : 8/2/2012
Page No : 1

Groups Printed- Unshifted

	Keeaumoku Street Southbound					Kapiolani Boulevard Westbound					Ala Moana Shopping Center Northbound					Kapiolani Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	11	14	10	9	44	16	129	0	11	156	0	5	0	4	9	10	50	2	29	91	300
06:15 AM	3	41	22	5	71	8	198	0	20	226	0	4	0	5	9	6	50	1	48	105	411
06:30 AM	15	53	22	7	97	16	276	0	21	313	0	2	0	12	14	14	76	0	32	122	546
06:45 AM	8	52	19	5	84	16	375	0	21	412	0	6	0	14	20	19	78	0	56	153	669
Total	37	160	73	26	296	56	978	0	73	1107	0	17	0	35	52	49	254	3	165	471	1926
07:00 AM	19	62	27	10	118	25	398	0	19	442	0	8	0	14	22	12	105	0	51	168	750
07:15 AM	14	45	24	22	105	28	490	0	59	577	0	9	0	12	21	20	101	0	55	176	879
07:30 AM	15	81	28	20	144	23	434	0	66	523	0	6	0	23	29	22	113	0	56	191	887
07:45 AM	12	88	33	45	178	23	404	0	65	492	0	18	0	16	34	21	143	1	93	258	962
Total	60	276	112	97	545	99	1726	0	209	2034	0	41	0	65	106	75	462	1	255	793	3478
08:00 AM	15	121	25	25	186	33	358	0	71	462	0	7	0	20	27	21	121	0	72	214	889
08:15 AM	15	104	31	65	215	24	304	0	31	359	0	16	0	13	29	23	149	1	76	249	852
08:30 AM	14	97	33	17	161	37	276	0	43	356	0	21	0	16	37	29	170	7	65	271	825
08:45 AM	25	123	27	23	198	28	262	0	52	342	0	7	0	22	29	29	159	18	66	272	841
Total	69	445	116	130	760	122	1200	0	197	1519	0	51	0	71	122	102	599	26	279	1006	3407
Grand Total	166	881	301	253	1601	277	3904	0	479	4660	0	109	0	171	280	226	1315	30	699	2270	8811
Apprch %	10.4	55	18.8	15.8		5.9	83.8	0	10.3		0	38.9	0	61.1		10	57.9	1.3	30.8		
Total %	1.9	10	3.4	2.9	18.2	3.1	44.3	0	5.4	52.9	0	1.2	0	1.9	3.2	2.6	14.9	0.3	7.9	25.8	

	Keeaumoku Street Southbound				Kapiolani Boulevard Westbound				Ala Moana Shopping Center Northbound				Kapiolani Boulevard Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	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 07:15 AM																	
07:15 AM	14	45	24	83	28	**490**	0	**518**	0	9	0	9	20	101	0	121	731
07:30 AM	**15**	81	28	124	23	434	0	457	0	6	0	6	**22**	113	0	135	722
07:45 AM	12	88	**33**	133	23	404	0	427	0	**18**	0	**18**	21	**143**	**1**	**165**	**743**
08:00 AM	15	**121**	25	**161**	**33**	358	0	391	0	7	0	7	21	121	0	142	701
Total Volume	56	335	110	501	107	1686	0	1793	0	40	0	40	84	478	1	563	2897
% App. Total	11.2	66.9	22		6	94	0		0	100	0		14.9	84.9	0.2		
PHF	.933	.692	.833	.778	.811	.860	.000	.865	.000	.556	.000	.556	.955	.836	.250	.853	.975

DRAFT

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

Groups Printed- Unshifted

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

	Southbound	Westbound	Street Between Ala MOana Ramp And Nordstrom Northbound				Eastbound	
Start Time	App. Total	App. Total	Right	Thru	Left	App. Total	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	0	0	5	26	0	31	0	31
08:00 AM	0	0	2	25	0	27	0	27
08:15 AM	0	0	6	39	0	45	0	45
08:30 AM	0	0	2	24	0	26	0	26
Total Volume	0	0	15	114	0	129	0	129
% App. Total			11.6	88.4	0			
PHF	.000	.000	.625	.731	.000	.717	.000	.717

DRAFT

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

	Keeaumoku Street Southbound					Kapiolani Boulevard Westbound					Ala Moana Shopping Center Northbound					Kapiolani Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
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
Total	64	550	202	109	925	118	816	0	608	1542	20	216	0	232	468	118	1051	105	349	1623	4558
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
Total	51	528	239	211	1029	137	663	0	567	1367	13	259	0	192	464	108	1546	99	492	2245	5105
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
Total	86	658	239	229	1212	125	661	0	522	1308	44	241	0	173	458	76	1340	106	708	2230	5208
Grand Total	201	1736	680	549	3166	380	2140	0	1697	4217	77	716	0	597	1390	302	3937	310	1549	6098	14871
Apprch %	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	

	Keeaumoku Street Southbound				Kapiolani Boulevard Westbound				Ala Moana Shopping Center Northbound				Kapiolani Boulevard Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
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																	
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		14.8	85.2	0		10.1	89.9	0		4.3	90	5.6		
PHF	.565	.868	.837	.861	.648	.935	.000	.877	.412	.906	.000	.952	.731	.915	.797	.898	.965

DRAFT

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

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

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

DRAFT

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 AM
Site Code : 00000000
Start Date : 8/2/2012
Page No : 1

Groups Printed- Unshifted

	Kaheka Street Southbound					Kapiolani Boulevard Westbound					Mahukona Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	8	16	7	10	41	11	136	1	7	155	0	17	5	4	26	9	51	0	9	69	291
06:15 AM	4	15	4	13	36	12	181	1	20	214	4	15	10	12	41	15	64	0	20	99	390
06:30 AM	10	24	9	15	58	23	311	2	26	362	2	28	6	13	49	17	75	1	22	115	584
06:45 AM	13	26	7	16	62	24	344	0	40	408	0	24	7	18	49	17	90	0	20	127	646
Total	35	81	27	54	197	70	972	4	93	1139	6	84	28	47	165	58	280	1	71	410	1911
07:00 AM	14	22	7	15	58	31	402	2	34	469	2	37	17	15	71	23	94	0	29	146	744
07:15 AM	15	41	20	17	93	38	475	2	40	555	6	31	17	26	80	22	116	0	16	154	882
07:30 AM	27	32	13	30	102	31	444	1	51	527	2	43	10	27	82	20	117	0	23	160	871
07:45 AM	18	38	17	19	92	31	392	1	60	484	3	35	7	19	64	19	163	0	24	206	846
Total	74	133	57	81	345	131	1713	6	185	2035	13	146	51	87	297	84	490	0	92	666	3343
08:00 AM	23	41	23	33	120	31	370	2	46	449	2	44	8	29	83	12	131	1	18	162	814
08:15 AM	17	50	13	49	129	34	305	1	40	380	3	47	2	15	67	26	160	0	20	206	782
08:30 AM	13	46	18	30	107	33	285	6	45	369	5	40	8	25	78	22	175	0	35	232	786
08:45 AM	18	44	24	48	134	47	261	7	45	360	9	45	16	23	93	17	172	8	31	228	815
Total	71	181	78	160	490	145	1221	16	176	1558	19	176	34	92	321	77	638	9	104	828	3197
Grand Total	180	395	162	295	1032	346	3906	26	454	4732	38	406	113	226	783	219	1408	10	267	1904	8451
Apprch %	17.4	38.3	15.7	28.6		7.3	82.5	0.5	9.6		4.9	51.9	14.4	28.9		11.5	73.9	0.5	14		
Total %	2.1	4.7	1.9	3.5	12.2	4.1	46.2	0.3	5.4	56	0.4	4.8	1.3	2.7	9.3	2.6	16.7	0.1	3.2	22.5	

	Kaheka Street Southbound				Kapiolani Boulevard Westbound				Mahukona Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	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 07:15 AM																	
07:15 AM	15	41	20	76	38	475	2	515	6	31	17	54	22	116	0	138	783
07:30 AM	27	32	13	72	31	444	1	476	2	43	10	55	20	117	0	137	740
07:45 AM	18	38	17	73	31	392	1	424	3	35	7	45	19	163	0	182	724
08:00 AM	23	41	23	87	31	370	2	403	2	44	8	54	12	131	1	144	688
Total Volume	83	152	73	308	131	1681	6	1818	13	153	42	208	73	527	1	601	2935
% App. Total	26.9	49.4	23.7		7.2	92.5	0.3		6.2	73.6	20.2		12.1	87.7	0.2		
PHF	.769	.927	.793	.885	.862	.885	.750	.883	.542	.869	.618	.945	.830	.808	.250	.826	.937

DRAFT

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

	Kaheka Street Southbound					Kapiolani Boulevard Westbound					Mahukona Street Northbound					Kapiolani Boulevard Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	33	53	28	43	157	35	179	2	73	289	13	48	14	55	130	34	285	20	49	388	964
03:15 PM	30	80	23	33	166	43	201	0	59	303	18	70	13	36	137	24	269	14	41	348	954
03:30 PM	47	85	37	54	223	63	197	1	69	330	20	76	13	41	150	27	324	8	47	406	1109
03:45 PM	22	95	32	44	193	64	212	0	33	309	16	70	8	33	127	26	325	5	27	383	1012
Total	132	313	120	174	739	205	789	3	234	1231	67	264	48	165	544	111	1203	47	164	1525	4039
04:00 PM	19	107	32	22	180	82	171	0	72	325	21	82	4	38	145	23	382	8	42	455	1105
04:15 PM	27	71	31	42	171	78	175	0	93	346	17	64	7	49	137	16	454	9	44	523	1177
04:30 PM	24	103	25	33	185	67	163	0	84	314	14	83	5	41	143	19	500	11	53	583	1225
04:45 PM	16	84	31	44	175	63	186	0	80	329	25	66	4	46	141	24	424	8	44	500	1145
Total	86	365	119	141	711	290	695	0	329	1314	77	295	20	174	566	82	1760	36	183	2061	4652
05:00 PM	16	104	30	58	208	79	165	0	74	318	28	90	7	60	185	21	481	8	47	557	1268
05:15 PM	18	99	34	37	188	54	163	1	82	300	10	72	3	45	130	17	430	6	38	491	1109
05:30 PM	23	111	36	65	235	62	178	0	47	287	16	82	3	31	132	26	351	7	41	425	1079
05:45 PM	26	85	33	35	179	68	188	0	66	322	17	47	2	35	101	25	339	7	31	402	1004
Total	83	399	133	195	810	263	694	1	269	1227	71	291	15	171	548	89	1601	28	157	1875	4460
Grand Total	301	1077	372	510	2260	758	2178	4	832	3772	215	850	83	510	1658	282	4564	111	504	5461	13151
Apprch %	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	

	Kaheka Street Southbound				Kapiolani Boulevard Westbound				Mahukona Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
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																	
04:15 PM	**27**	71	**31**	129	78	175	0	**253**	17	64	**7**	88	16	454	9	479	949
04:30 PM	24	103	25	**152**	67	163	0	230	14	83	5	102	19	**500**	**11**	**530**	1014
04:45 PM	16	84	31	131	63	**186**	0	249	25	66	4	95	**24**	424	8	456	931
05:00 PM	16	**104**	30	150	**79**	165	0	244	**28**	**90**	7	**125**	21	481	8	510	**1029**
Total Volume	83	362	117	562	287	689	0	976	84	303	23	410	80	1859	36	1975	3923
% 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	.932	.953

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Southbound	Kapiolani Boulevard Westbound					Atkinson Drive Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	82	139	0	0	221	0	0	19	4	23	0	52	6	10	68	312
06:15 AM	0	101	193	0	0	294	0	0	24	7	31	0	54	7	17	78	403
06:30 AM	0	133	253	0	0	386	0	0	53	9	62	0	71	10	10	91	539
06:45 AM	0	191	392	0	0	583	0	0	69	7	76	0	88	10	13	111	770
Total	0	507	977	0	0	1484	0	0	165	27	192	0	265	33	50	348	2024
07:00 AM	0	230	400	0	0	630	0	0	74	6	80	0	106	16	26	148	858
07:15 AM	0	214	485	0	0	699	0	0	49	28	77	0	145	16	17	178	954
07:30 AM	0	237	455	0	0	692	0	0	70	13	83	0	133	16	22	171	946
07:45 AM	0	279	446	0	0	725	0	0	70	12	82	0	134	20	28	182	989
Total	0	960	1786	0	0	2746	0	0	263	59	322	0	518	68	93	679	3747
08:00 AM	0	198	421	0	0	619	0	0	57	19	76	0	141	18	28	187	882
08:15 AM	0	244	452	0	0	696	0	0	69	12	81	0	151	17	13	181	958
08:30 AM	0	211	300	0	0	511	0	0	97	6	103	0	156	14	34	204	818
08:45 AM	0	201	233	0	0	434	0	0	83	15	98	0	153	21	41	215	747
Total	0	854	1406	0	0	2260	0	0	306	52	358	0	601	70	116	787	3405
Grand Total	0	2321	4169	0	0	6490	0	0	734	138	872	0	1384	171	259	1814	9176
Apprch %		35.8	64.2	0	0		0	0	84.2	15.8		0	76.3	9.4	14.3		
Total %	0	25.3	45.4	0	0	70.7	0	0	8	1.5	9.5	0	15.1	1.9	2.8	19.8	

	Southbound	Kapiolani Boulevard Westbound				Atkinson Drive Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM														
07:30 AM	0	237	**455**	0	692	0	0	**70**	**70**	0	133	16	149	911
07:45 AM	0	**279**	446	0	**725**	0	0	70	70	0	134	**20**	154	**949**
08:00 AM	0	198	421	0	619	0	0	57	57	0	141	18	159	835
08:15 AM	0	244	452	0	696	0	0	69	69	0	**151**	17	**168**	933
Total Volume	0	958	1774	0	2732	0	0	266	266	0	559	71	630	3628
% App. Total		35.1	64.9	0		0	0	100		0	88.7	11.3		
PHF	.000	.858	.975	.000	.942	.000	.000	.950	.950	.000	.925	.888	.938	.956

DRAFT

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

	Southbound	Kapiolani Boulevard Westbound					Atkinson Drive Northbound					Kapiolani Boulevard Eastbound					
Start Time	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	36	180	0	0	216	0	0	161	20	181	0	192	41	37	270	667
03:15 PM	0	2	204	0	0	206	0	0	176	11	187	0	223	51	34	308	701
03:30 PM	0	0	322	0	0	322	0	0	186	11	197	0	313	57	21	391	910
03:45 PM	0	0	231	0	0	231	0	0	171	11	182	0	302	47	26	375	788
Total	0	38	937	0	0	975	0	0	694	53	747	0	1030	196	118	1344	3066
04:00 PM	0	2	252	0	0	254	0	0	187	8	195	0	363	42	24	429	878
04:15 PM	0	1	272	0	0	273	0	0	183	21	204	0	372	61	13	446	923
04:30 PM	0	1	274	0	0	275	0	0	189	11	200	0	385	50	50	485	960
04:45 PM	0	0	256	0	0	256	0	0	190	18	208	0	374	64	31	469	933
Total	0	4	1054	0	0	1058	0	0	749	58	807	0	1494	217	118	1829	3694
05:00 PM	0	0	264	0	0	264	0	0	197	21	218	0	404	62	38	504	986
05:15 PM	0	0	294	0	0	294	0	0	204	24	228	0	374	52	41	467	989
05:30 PM	0	0	231	0	0	231	0	0	175	19	194	0	335	60	36	431	856
05:45 PM	0	0	242	0	0	242	0	0	223	35	258	0	377	48	44	469	969
Total	0	0	1031	0	0	1031	0	0	799	99	898	0	1490	222	159	1871	3800
Grand Total	0	42	3022	0	0	3064	0	0	2242	210	2452	0	4014	635	395	5044	10560
Apprch %		1.4	98.6	0	0		0	0	91.4	8.6		0	79.6	12.6	7.8		
Total %	0	0.4	28.6	0	0	29	0	0	21.2	2	23.2	0	38	6	3.7	47.8	

	Southbound	Kapiolani Boulevard Westbound				Atkinson Drive Northbound				Kapiolani Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:30 PM	0	**1**	274	0	275	0	0	189	189	0	385	50	435	899
04:45 PM	0	0	256	0	256	0	0	190	190	0	374	**64**	438	884
05:00 PM	0	0	264	0	264	0	0	197	197	0	**404**	62	**466**	**927**
05:15 PM	0	0	**294**	0	**294**	0	0	**204**	**204**	0	374	52	426	924
Total Volume	0	1	1088	0	1089	0	0	780	780	0	1537	228	1765	3634
% App. Total		0.1	99.9	0		0	0	100		0	87.1	12.9		
PHF	.000	.250	.925	.000	.926	.000	.000	.956	.956	.000	.951	.891	.947	.980

DRAFT

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

	Kalakaua Avenue Southbound					Kapiolani Boulevard Westbound					Kalakaua Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
06:00 AM	0	116	11	8	135	0	172	12	3	187	9	114	23	0	146	0	49	7	3	59	527
06:15 AM	0	164	7	21	192	0	223	15	7	245	39	51	4	0	94	0	34	23	9	66	597
06:30 AM	0	129	13	18	160	0	367	23	4	394	58	79	11	0	148	0	82	45	14	141	843
06:45 AM	0	162	17	28	207	0	514	33	11	558	78	96	9	0	183	0	80	64	20	164	1112
Total	0	571	48	75	694	0	1276	83	25	1384	184	340	47	0	571	0	245	139	46	430	3079
07:00 AM	0	135	18	32	185	0	560	40	21	621	101	151	13	0	265	0	114	70	17	201	1272
07:15 AM	0	117	6	29	152	0	600	43	14	657	138	188	13	0	339	0	83	105	52	240	1388
07:30 AM	0	152	13	37	202	0	557	44	18	619	135	188	24	0	347	0	85	134	29	248	1416
07:45 AM	0	136	9	46	191	0	566	59	16	641	123	169	14	0	306	0	108	104	49	261	1399
Total	0	540	46	144	730	0	2283	186	69	2538	497	696	64	0	1257	0	390	413	147	950	5475
08:00 AM	0	187	32	34	253	0	479	51	20	550	113	157	17	0	287	0	78	107	22	207	1297
08:15 AM	0	160	16	36	212	0	615	37	16	668	136	132	19	0	287	0	121	101	23	245	1412
08:30 AM	0	175	24	41	240	0	394	45	24	463	116	138	21	0	275	0	111	103	27	241	1219
08:45 AM	0	171	28	32	231	0	408	34	8	450	120	153	11	0	284	0	128	136	17	281	1246
Total	0	693	100	143	936	0	1896	167	68	2131	485	580	68	0	1133	0	438	447	89	974	5174
Grand Total	0	1804	194	362	2360	0	5455	436	162	6053	1166	1616	179	0	2961	0	1073	999	282	2354	13728
Apprch %	0	76.4	8.2	15.3		0	90.1	7.2	2.7		39.4	54.6	6	0		0	45.6	42.4	12		
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	

	Kalakaua Avenue Southbound				Kapiolani Boulevard Westbound				Kalakaua Avenue Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM																	
07:30 AM	0	152	13	165	0	557	44	601	135	**188**	**24**	**347**	0	85	**134**	219	1332
07:45 AM	0	136	9	145	0	566	**59**	625	123	169	14	306	0	108	104	212	1288
08:00 AM	0	**187**	**32**	**219**	0	479	51	530	113	157	17	287	0	78	107	185	1221
08:15 AM	0	160	16	176	0	**615**	37	**652**	**136**	132	19	287	0	**121**	101	**222**	**1337**
Total Volume	0	635	70	705	0	2217	191	2408	507	646	74	1227	0	392	446	838	5178
% App. Total	0	90.1	9.9		0	92.1	7.9		41.3	52.6	6		0	46.8	53.2		
PHF	.000	.849	.547	.805	.000	.901	.809	.923	.932	.859	.771	.884	.000	.810	.832	.944	.968

DRAFT

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

	Kalakaua Avenue Southbound					Kapiolani Boulevard Westbound					Kalakaua Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
03:00 PM	0	171	21	35	227	0	189	31	20	240	0	170	13	0	183	0	306	114	21	441	1091
03:15 PM	0	228	21	43	292	0	184	40	20	244	0	226	7	0	233	0	273	116	16	405	1174
03:30 PM	0	116	19	39	174	0	336	40	14	390	0	196	14	0	210	0	352	141	14	507	1281
03:45 PM	0	212	27	33	272	0	208	44	13	265	0	203	8	0	211	0	314	151	21	486	1234
Total	0	727	88	150	965	0	917	155	67	1139	0	795	42	0	837	0	1245	522	72	1839	4780
04:00 PM	0	182	18	35	235	0	233	38	22	293	0	189	18	0	207	0	399	143	15	557	1292
04:15 PM	0	168	29	39	236	0	250	40	20	310	0	210	14	0	224	0	382	159	29	570	1340
04:30 PM	0	206	35	63	304	0	231	40	38	309	0	236	15	0	251	0	382	177	26	585	1449
04:45 PM	0	173	18	54	245	0	239	39	19	297	0	224	12	0	236	0	394	185	23	602	1380
Total	0	729	100	191	1020	0	953	157	99	1209	0	859	59	0	918	0	1557	664	93	2314	5461
05:00 PM	0	187	28	42	257	0	252	39	30	321	0	214	15	0	229	0	401	195	34	630	1437
05:15 PM	0	154	29	63	246	0	256	34	25	315	0	210	9	0	219	0	385	195	35	615	1395
05:30 PM	0	198	33	66	297	0	199	36	36	271	0	195	20	0	215	0	353	141	38	532	1315
05:45 PM	0	150	19	59	228	0	235	48	25	308	0	232	11	0	243	0	393	183	25	601	1380
Total	0	689	109	230	1028	0	942	157	116	1215	0	851	55	0	906	0	1532	714	132	2378	5527
Grand Total	0	2145	297	571	3013	0	2812	469	282	3563	0	2505	156	0	2661	0	4334	1900	297	6531	15768
Apprch %	0	71.2	9.9	19		0	78.9	13.2	7.9		0	94.1	5.9	0		0	66.4	29.1	4.5		
Total %	0	13.6	1.9	3.6	19.1	0	17.8	3	1.8	22.6	0	15.9	1	0	16.9	0	27.5	12	1.9	41.4	

	Kalakaua Avenue Southbound				Kapiolani Boulevard Westbound				Kalakaua Avenue Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	0	**206**	**35**	**241**	0	231	**40**	271	0	**236**	**15**	**251**	0	382	177	559	1322
04:45 PM	0	173	18	191	0	239	39	278	0	224	12	236	0	394	185	579	1284
05:00 PM	0	187	28	215	0	252	39	**291**	0	214	15	229	0	**401**	**195**	**596**	**1331**
05:15 PM	0	154	29	183	0	**256**	34	290	0	210	9	219	0	385	195	580	1272
Total Volume	0	720	110	830	0	978	152	1130	0	884	51	935	0	1562	752	2314	5209
% App. Total	0	86.7	13.3		0	86.5	13.5		0	94.5	5.5		0	67.5	32.5		
PHF	.000	.874	.786	.861	.000	.955	.950	.971	.000	.936	.850	.931	.000	.974	.964	.971	.978

DRAFT

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

	McCully Street Southbound					Kapiolani Boulevard Westbound					McCully Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
06:00 AM	3	79	7	11	100	34	148	6	9	197	8	102	14	9	133	1	46	6	3	56	486
06:15 AM	5	103	1	8	117	33	216	3	14	266	12	122	28	14	176	0	41	3	6	50	609
06:30 AM	3	97	9	14	123	63	380	1	18	462	10	131	43	18	202	0	78	2	19	99	886
06:45 AM	7	116	11	10	144	64	511	7	16	598	18	105	44	16	183	0	89	6	17	112	1037
Total	18	395	28	43	484	194	1255	17	57	1523	48	460	129	57	694	1	254	17	45	317	3018
07:00 AM	7	81	13	17	118	60	573	2	17	652	22	147	54	23	246	0	102	3	9	114	1130
07:15 AM	5	107	14	32	158	64	585	3	27	679	44	98	45	30	217	0	113	4	9	126	1180
07:30 AM	7	124	22	16	169	69	563	6	29	667	36	138	55	30	259	0	93	2	22	117	1212
07:45 AM	9	131	19	9	168	69	625	3	20	717	29	103	62	22	216	0	125	9	22	156	1257
Total	28	443	68	74	613	262	2346	14	93	2715	131	486	216	105	938	0	433	18	62	513	4779
08:00 AM	17	172	17	8	214	61	476	4	18	559	30	116	60	19	225	1	84	8	17	110	1108
08:15 AM	12	120	20	3	155	85	529	4	14	632	47	122	65	19	253	0	111	9	20	140	1180
08:30 AM	10	107	20	9	146	90	398	2	22	512	28	143	91	21	283	0	140	10	14	164	1105
08:45 AM	17	121	12	10	160	88	334	31	24	477	30	123	72	24	249	0	125	7	10	142	1028
Total	56	520	69	30	675	324	1737	41	78	2180	135	504	288	83	1010	1	460	34	61	556	4421
Grand Total	102	1358	165	147	1772	780	5338	72	228	6418	314	1450	633	245	2642	2	1147	69	168	1386	12218
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	

	McCully Street Southbound				Kapiolani Boulevard Westbound				McCully Street Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM																	
07:30 AM	7	124	**22**	153	69	563	**6**	638	36	**138**	55	229	0	93	2	95	1115
07:45 AM	9	131	19	159	69	**625**	3	**697**	29	103	62	194	0	**125**	**9**	**134**	**1184**
08:00 AM	**17**	**172**	17	**206**	61	476	4	541	30	116	60	206	**1**	84	8	93	1046
08:15 AM	12	120	20	152	**85**	529	4	618	**47**	122	**65**	**234**	0	111	9	120	1124
Total Volume	45	547	78	670	284	2193	17	2494	142	479	242	863	1	413	28	442	4469
% 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

DRAFT

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

	McCully Street Southbound					Kapiolani Boulevard Westbound					McCully Street Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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
Total	36	630	60	91	817	8	783	36	87	914	133	593	323	99	1148	78	1170	56	56	1360	4239
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
Total	30	632	55	105	822	0	807	38	127	972	193	555	326	129	1203	122	1380	97	72	1671	4668
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
Total	43	609	74	146	872	1	775	36	136	948	189	641	308	130	1268	142	1293	86	89	1610	4698
Grand Total	109	1871	189	342	2511	9	2365	110	350	2834	515	1789	957	358	3619	342	3843	239	217	4641	13605
Apprch %	4.3	74.5	7.5	13.6		0.3	83.5	3.9	12.4		14.2	49.4	26.4	9.9		7.4	82.8	5.1	4.7		
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	

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Isenberg Street Southbound					Kapiolani Boulevard Westbound					Marco Polo Condominium Driveway Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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	3	189	0	17	209	787
08:30 AM	8	0	13	0	21	0	474	3	0	477	13	3	9	0	25	5	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	8	774	0	46	828	3069
Grand Total	136	2	165	14	317	0	5887	52	0	5939	104	72	74	0	250	8	1904	1	112	2025	8531
Apprch %	42.9	0.6	52.1	4.4		0	99.1	0.9	0		41.6	28.8	29.6	0		0.4	94	0	5.5		
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	

	Isenberg Street Southbound				Kapiolani Boulevard Westbound				Marco Polo Condominium Driveway Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:00 AM																	
07:00 AM	**26**	0	8	34	0	613	3	616	4	6	7	17	0	173	0	173	840
07:15 AM	25	0	**25**	**50**	0	632	0	632	2	10	**14**	26	0	181	0	181	**889**
07:30 AM	11	0	16	27	0	**647**	8	**655**	**13**	**15**	7	**35**	0	158	**1**	159	876
07:45 AM	12	0	14	26	0	602	**9**	611	11	8	10	29	0	**186**	0	**186**	852
Total Volume	74	0	63	137	0	2494	20	2514	30	39	38	107	0	698	1	699	3457
% App. Total	54	0	46		0	99.2	0.8		28	36.4	35.5		0	99.9	0.1		
PHF	.712	.000	.630	.685	.000	.964	.556	.960	.577	.650	.679	.764	.000	.938	.250	.940	.972

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Isenberg Street Southbound					Kapiolani Boulevard Westbound					Marco Polo Condominium Driveway Northbound					Kapiolani Boulevard Eastbound					
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	Int. Total
03:00 PM	19	9	9	3	40	0	236	12	15	263	17	56	8	0	81	36	302	24	7	369	753
03:15 PM	26	9	9	9	53	0	258	14	15	287	19	47	20	0	86	42	301	15	1	359	785
03:30 PM	25	13	8	8	54	0	258	9	16	283	13	31	7	0	51	25	289	13	2	329	717
03:45 PM	17	9	12	7	45	0	249	18	13	280	0	3	7	4	14	19	365	0	0	384	723
Total	87	40	38	27	192	0	1001	53	59	1113	49	137	42	4	232	122	1257	52	10	1441	2978
04:00 PM	32	10	4	6	52	1	212	14	18	245	0	5	1	0	6	11	391	0	0	402	705
04:15 PM	32	9	3	3	47	0	226	6	22	254	1	3	0	0	4	10	380	0	0	390	695
04:30 PM	29	6	8	5	48	0	208	13	17	238	8	6	4	0	18	17	389	0	0	406	710
04:45 PM	25	15	9	10	59	0	208	15	19	242	3	6	4	0	13	13	426	0	0	439	753
Total	118	40	24	24	206	1	854	48	76	979	12	20	9	0	41	51	1586	0	0	1637	2863
05:00 PM	29	10	9	13	61	0	211	19	35	265	2	5	3	0	10	11	393	1	0	405	741
05:15 PM	49	20	11	6	86	0	208	13	26	247	3	3	1	0	7	6	344	0	0	350	690
05:30 PM	41	15	6	12	74	0	209	8	20	237	6	3	0	0	9	9	387	0	0	396	716
05:45 PM	41	7	11	11	70	0	226	12	38	276	3	5	2	0	10	18	354	0	0	372	728
Total	160	52	37	42	291	0	854	52	119	1025	14	16	6	0	36	44	1478	1	0	1523	2875
Grand Total	365	132	99	93	689	1	2709	153	254	3117	75	173	57	4	309	217	4321	53	10	4601	8716
Apprch %	53	19.2	14.4	13.5		0	86.9	4.9	8.1		24.3	56	18.4	1.3		4.7	93.9	1.2	0.2		
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	

	Isenberg Street Southbound				Kapiolani Boulevard Westbound				Marco Polo Condominium Driveway Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:00 PM	19	9	9	37	0	236	12	248	17	**56**	8	81	36	302	**24**	362	728
03:15 PM	**26**	9	9	44	0	**258**	14	**272**	**19**	47	**20**	**86**	**42**	301	15	358	**760**
03:30 PM	25	**13**	8	**46**	0	258	9	267	13	31	7	51	25	289	13	327	691
03:45 PM	17	9	**12**	38	0	249	**18**	267	0	3	7	10	19	**365**	0	**384**	699
Total Volume	87	40	38	165	0	1001	53	1054	49	137	42	228	122	1257	52	1431	2878
% App. Total	52.7	24.2	23		0	95	5		21.5	60.1	18.4		8.5	87.8	3.6		
PHF	.837	.769	.792	.897	.000	.970	.736	.969	.645	.612	.525	.663	.726	.861	.542	.932	.947

DRAFT

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

	University Avenue Southbound					Kapiolani Boulevard Westbound					University Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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
Apprch %	8.1	51.1	34.7	6.1		4.4	90.4	3.2	2.1		31	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	

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

DRAFT

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

	University Avenue Southbound					Kapiolani Boulevard Westbound					University Avenue Northbound					Kapiolani Boulevard Eastbound					
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	Int. 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
Total	70	105	98	13	286	104	791	18	18	931	65	110	48	41	264	151	1196	167	0	1514	2995
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
Total	87	131	96	18	332	115	826	32	33	1006	61	120	49	50	280	198	1361	171	0	1730	3348
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
Total	87	94	90	18	289	101	884	14	27	1026	63	120	45	57	285	144	1366	209	0	1719	3319
Grand Total	244	330	284	49	907	320	2501	64	78	2963	189	350	142	148	829	493	3923	547	0	4963	9662
Apprch %	26.9	36.4	31.3	5.4		10.8	84.4	2.2	2.6		22.8	42.2	17.1	17.9		9.9	79	11	0		
Total %	2.5	3.4	2.9	0.5	9.4	3.3	25.9	0.7	0.8	30.7	2	3.6	1.5	1.5	8.6	5.1	40.6	5.7	0	51.4	

	University Avenue Southbound				Kapiolani Boulevard Westbound				University Avenue Northbound				Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	21	**34**	22	77	28	231	**7**	266	15	32	13	60	**55**	330	39	424	827
04:45 PM	**29**	33	23	**85**	**35**	201	5	241	18	**42**	12	**72**	40	**364**	49	**453**	**851**
05:00 PM	14	17	**30**	61	29	**240**	2	**271**	**21**	34	10	65	38	339	54	431	828
05:15 PM	24	32	21	77	26	206	3	235	10	32	**16**	58	41	352	**56**	449	819
Total Volume	88	116	96	300	118	878	17	1013	64	140	51	255	174	1385	198	1757	3325
% App. Total	29.3	38.7	32		11.6	86.7	1.7		25.1	54.9	20		9.9	78.8	11.3		
PHF	.759	.853	.800	.882	.843	.915	.607	.935	.762	.833	.797	.885	.791	.951	.884	.970	.977

DRAFT

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

Groups Printed- Unshifted

	Date Street Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kamoku Street Southbound					Westbound	Kamoku Street Left = Left Turn To Date Street, Right = Right Turn To Date Street Northbound					Kapiolani Boulevard Right = Right Turn To Kamoku Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	7	22	5	5	39	0	14	0	2	2	18	0	21	5	4	30	87
06:15 AM	4	26	25	4	59	0	21	0	2	2	25	0	52	4	1	57	141
06:30 AM	13	47	47	8	115	0	38	0	11	5	54	0	37	6	7	50	219
06:45 AM	10	54	57	7	128	0	47	0	11	7	65	0	72	3	5	80	273
Total	34	149	134	24	341	0	120	0	26	16	162	0	182	18	17	217	720
07:00 AM	10	49	50	3	112	0	41	0	14	3	58	0	83	4	7	94	264
07:15 AM	22	59	47	9	137	0	34	0	11	0	45	0	93	33	10	136	318
07:30 AM	22	50	52	15	139	0	33	0	13	7	53	0	127	5	5	137	329
07:45 AM	27	57	11	6	101	0	28	0	29	6	63	0	108	6	7	121	285
Total	81	215	160	33	489	0	136	0	67	16	219	0	411	48	29	488	1196
08:00 AM	17	45	14	7	83	0	27	0	19	3	49	0	97	8	4	109	241
08:15 AM	9	72	7	8	96	0	12	0	4	2	18	0	99	4	3	106	220
08:30 AM	13	37	7	4	61	0	13	0	6	3	22	0	89	2	2	93	176
08:45 AM	10	40	4	3	57	0	19	0	5	4	28	0	96	3	2	101	186
Total	49	194	32	22	297	0	71	0	34	12	117	0	381	17	11	409	823
Grand Total	164	558	326	79	1127	0	327	0	127	44	498	0	974	83	57	1114	2739
Apprch %	14.6	49.5	28.9	7			65.7	0	25.5	8.8		0	87.4	7.5	5.1		
Total %	6	20.4	11.9	2.9	41.1	0	11.9	0	4.6	1.6	18.2	0	35.6	3	2.1	40.7	

	Date Street Left = Left Turn To Kapiolani Boulevard, Right = Right Turn To Kamoku Street Southbound				Westbound	Kamoku Street Left = Left Turn To Date Street, Right = Right Turn To Date Street Northbound				Kapiolani Boulevard Right = Right Turn To Kamoku Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:00 AM														
07:00 AM	10	49	50	109	0	**41**	0	14	55	0	83	4	87	251
07:15 AM	22	**59**	47	**128**	0	34	0	11	45	0	93	**33**	126	299
07:30 AM	22	50	**52**	124	0	33	0	13	46	0	**127**	5	**132**	**302**
07:45 AM	**27**	57	11	95	0	28	0	**29**	**57**	0	108	6	114	266
Total Volume	81	215	160	456	0	136	0	67	203	0	411	48	459	1118
% App. Total	17.8	47.1	35.1			67	0	33		0	89.5	10.5		
PHF	.750	.911	.769	.891	.000	.829	.000	.578	.890	.000	.809	.364	.869	.925

DRAFT

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

Groups Printed- Unshifted

	Date Street Right = Right Turn To Kapiolani Boulevard Southbound					Westbound	Kamoku Street Left = Left Turn To Kapiolani Boulevard, Right Turn To Kapiolani Boulevard Northbound					Kapiolani Boulevard Right = Right Turn To Date Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	0	2	0	2	0	9	0	1	0	10	0	0	22	0	22	34
06:15 AM	0	0	3	0	3	0	14	0	3	0	17	0	0	13	0	13	33
06:30 AM	0	0	2	0	2	0	23	0	5	0	28	0	0	20	0	20	50
06:45 AM	0	0	0	0	0	0	30	0	12	0	42	0	0	32	0	32	74
Total	0	0	7	0	7	0	76	0	21	0	97	0	0	87	0	87	191
07:00 AM	0	0	2	0	2	0	36	0	20	0	56	0	0	25	0	25	83
07:15 AM	0	0	4	0	4	0	35	0	21	0	56	0	0	37	0	37	97
07:30 AM	0	0	4	0	4	0	38	0	14	0	52	0	0	33	0	33	89
07:45 AM	0	0	2	0	2	0	47	0	17	0	64	0	0	59	0	59	125
Total	0	0	12	0	12	0	156	0	72	0	228	0	0	154	0	154	394
08:00 AM	0	0	6	0	6	0	16	0	5	0	21	0	0	35	0	35	62
08:15 AM	0	0	5	0	5	0	8	0	7	0	15	0	0	27	0	27	47
08:30 AM	0	0	3	0	3	0	8	0	4	0	12	0	0	36	0	36	51
08:45 AM	0	0	0	0	0	0	12	0	3	0	15	0	0	44	0	44	59
Total	0	0	14	0	14	0	44	0	19	0	63	0	0	142	0	142	219
Grand Total	0	0	33	0	33	0	276	0	112	0	388	0	0	383	0	383	804
Apprch %	0	0	100	0			71.1	0	28.9	0		0	0	100	0		
Total %	0	0	4.1	0	4.1	0	34.3	0	13.9	0	48.3	0	0	47.6	0	47.6	

	Date Street Right = Right Turn To Kapiolani Boulevard Southbound				Westbound	Kamoku Street Left = Left Turn To Kapiolani Boulevard, Right Turn To Kapiolani Boulevard Northbound				Kapiolani Boulevard Right = Right Turn To Date Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:00 AM														
07:00 AM	0	0	2	2	0	36	0	20	56	0	0	25	25	83
07:15 AM	0	0	**4**	**4**	0	35	0	**21**	56	0	0	37	37	97
07:30 AM	0	0	4	4	0	38	0	14	52	0	0	33	33	89
07:45 AM	0	0	2	2	0	**47**	0	17	**64**	0	0	**59**	**59**	**125**
Total Volume	0	0	12	12	0	156	0	72	228	0	0	154	154	394
% App. Total	0	0	100			68.4	0	31.6		0	0	100		
PHF	.000	.000	.750	.750	.000	.830	.000	.857	.891	.000	.000	.653	.653	.788

DRAFT

Wilson Okamoto Corporation

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

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

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

Groups Printed- Unshifted

	Kamoku Street Right = Right Turn To Date Street Southbound					Kapiolani Boulevard Right = Right Turn To Date Street Westbound					Date Street Left = Left Turn To Kapiolani, Right = Right Turn To Kapiolani Boulevard Northbound					Eastbound	
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
06:00 AM	0	0	1	1	2	0	115	4	2	121	24	15	1	1	41	0	164
06:15 AM	0	0	4	1	5	0	227	16	11	254	45	18	3	4	70	0	329
06:30 AM	0	0	11	5	16	0	327	23	35	385	67	34	4	3	108	0	509
06:45 AM	0	0	11	3	14	0	478	61	8	547	57	38	2	10	107	0	668
Total	0	0	27	10	37	0	1147	104	56	1307	193	105	10	18	326	0	1670
07:00 AM	0	0	14	2	16	0	483	66	16	565	56	39	4	13	112	0	693
07:15 AM	0	0	36	2	38	0	512	79	34	625	81	35	3	9	128	0	791
07:30 AM	0	0	45	5	50	0	568	81	15	664	69	46	2	7	124	0	838
07:45 AM	0	0	46	5	51	0	532	91	15	638	84	43	3	7	137	0	826
Total	0	0	141	14	155	0	2095	317	80	2492	290	163	12	36	501	0	3148
08:00 AM	0	0	0	1	1	0	553	107	7	667	71	46	3	5	125	0	793
08:15 AM	0	0	0	1	1	0	410	115	13	538	81	61	2	1	145	0	684
08:30 AM	0	0	0	2	2	0	360	58	7	425	56	42	4	0	102	0	529
08:45 AM	0	0	0	3	3	0	295	34	3	332	58	54	4	1	117	0	452
Total	0	0	0	7	7	0	1618	314	30	1962	266	203	13	7	489	0	2458
Grand Total	0	0	168	31	199	0	4860	735	166	5761	749	471	35	61	1316	0	7276
Apprch %	0	0	84.4	15.6		0	84.4	12.8	2.9		56.9	35.8	2.7	4.6			
Total %	0	0	2.3	0.4	2.7	0	66.8	10.1	2.3	79.2	10.3	6.5	0.5	0.8	18.1	0	

	Kamoku Street Right = Right Turn To Date Street Southbound				Kapiolani Boulevard Right = Right Turn To Date Street Westbound				Date Street Left = Left Turn To Kapiolani, Right = Right Turn To Kapiolani Boulevard Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	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 07:15 AM														
07:15 AM	0	0	36	36	0	512	79	591	81	35	**3**	119	0	746
07:30 AM	0	0	45	45	0	**568**	81	649	69	**46**	2	117	0	**811**
07:45 AM	0	0	**46**	**46**	0	532	91	623	**84**	43	3	**130**	0	799
08:00 AM	0	0	0	0	0	553	**107**	**660**	71	46	3	120	0	780
Total Volume	0	0	127	127	0	2165	358	2523	305	170	11	486	0	3136
% App. Total	0	0	100		0	85.8	14.2		62.8	35	2.3			
PHF	.000	.000	.690	.690	.000	.953	.836	.956	.908	.924	.917	.935	.000	.967

DRAFT

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

Groups Printed- Unshifted

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

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

DRAFT

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

Groups Printed- Unshifted

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

	Date Street Left = Left Turn To Kapiolani Boulevard, Right - Right Turn To Kamoku Street Southbound				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				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:45 PM														
04:45 PM	21	**79**	23	**123**	0	**38**	0	31	69	0	248	22	270	**462**
05:00 PM	21	63	25	109	0	37	0	43	80	0	249	21	270	459
05:15 PM	**24**	68	**30**	122	0	26	0	**60**	**86**	0	230	19	249	457
05:30 PM	24	65	20	109	0	29	0	27	56	0	**257**	**26**	**283**	448
Total Volume	90	275	98	463	0	130	0	161	291	0	984	88	1072	1826
% App. Total	19.4	59.4	21.2			44.7	0	55.3		0	91.8	8.2		
PHF	.938	.870	.817	.941	.000	.855	.000	.671	.846	.000	.957	.846	.947	.988

DRAFT

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

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					
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	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	13	0	28	0	41	0	0	83	0	83	124
03:15 PM	0	0	1	0	1	0	0	0	0	0	4	0	17	0	21	0	0	104	0	104	126
03:30 PM	0	0	4	0	4	0	0	0	0	0	17	0	32	0	49	0	0	81	0	81	134
03:45 PM	0	0	0	0	0	0	0	0	0	0	6	0	22	0	28	0	0	98	0	98	126
Total	0	0	5	0	5	0	0	0	0	0	40	0	99	0	139	0	0	366	0	366	510
04:00 PM	0	0	2	0	2	0	0	0	0	0	10	0	26	0	36	0	0	96	0	96	134
04:15 PM	0	0	10	0	10	0	0	0	0	0	37	0	19	0	56	0	0	100	0	100	166
04:30 PM	0	0	5	0	5	0	0	0	0	0	17	0	30	0	47	0	0	135	0	135	187
04:45 PM	0	0	3	0	3	0	0	0	0	0	11	0	20	0	31	0	0	123	0	123	157
Total	0	0	20	0	20	0	0	0	0	0	75	0	95	0	170	0	0	454	0	454	644
05:00 PM	0	0	3	0	3	0	0	0	0	0	11	0	22	0	33	0	0	140	0	140	176
05:15 PM	0	0	3	0	3	0	0	0	0	0	12	0	29	0	41	0	0	114	0	114	158
05:30 PM	0	0	5	0	5	0	0	0	0	0	10	0	21	0	31	0	0	129	0	129	165
05:45 PM	0	0	1	0	1	0	0	0	0	0	13	0	24	0	37	0	0	128	0	128	166
Total	0	0	12	0	12	0	0	0	0	0	46	0	96	0	142	0	0	511	0	511	665
Grand Total	0	0	37	0	37	0	0	0	0	0	161	0	290	0	451	0	0	1331	0	1331	1819
Apprch %	0	0	100	0		0	0	0	0		35.7	0	64.3	0		0	0	100	0		
Total %	0	0	2	0	2	0	0	0	0	0	8.9	0	15.9	0	24.8	0	0	73.2	0	73.2	

	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					
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	Int. Total
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																					
04:15 PM	0	0	**10**	0	**10**	0	0	0	0	0	**37**	0	19	0	**56**	0	0	100	0	100	166
04:30 PM	0	0	5	0	5	0	0	0	0	0	17	0	**30**	0	47	0	0	135	0	135	**187**
04:45 PM	0	0	3	0	3	0	0	0	0	0	11	0	20	0	31	0	0	123	0	123	157
05:00 PM	0	0	3	0	3	0	0	0	0	0	11	0	22	0	33	0	0	**140**	0	**140**	176
Total Volume	0	0	21	0	21	0	0	0	0	0	76	0	91	0	167	0	0	498	0	498	686
% App. Total	0	0	100	0		0	0	0	0		45.5	0	54.5	0		0	0	100	0		
PHF	.000	.000	.525	.000	.525	.000	.000	.000	.000	.000	.514	.000	.758	.000	.746	.000	.000	.889	.000	.889	.917

DRAFT

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

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

	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	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
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														
04:30 PM	0	0	0	0	0	192	76	268	**45**	58	9	112	0	380
04:45 PM	0	0	0	0	0	188	**80**	268	44	**72**	9	**125**	0	393
05:00 PM	0	0	0	0	0	**220**	77	**297**	32	71	1	104	0	**401**
05:15 PM	0	0	0	0	0	192	62	254	35	71	**12**	118	0	372
Total Volume	0	0	0	0	0	792	295	1087	156	272	31	459	0	1546
% App. Total	0	0	0		0	72.9	27.1		34	59.3	6.8			
PHF	.000	.000	.000	.000	.000	.900	.922	.915	.867	.944	.646	.918	.000	.964

DRAFT

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

Groups Printed- Unshifted

	Southbound					Kapiolani Boulevard Right = Right Turn To Kamoku Street Westbound					Date Street Left = Left Turn To Kamoku Street Northbound					Eastbound					
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	Int. Total
03:00 PM	0	0	0	0	0	0	0	4	0	4	12	0	0	0	12	0	0	0	0	0	16
03:15 PM	0	0	0	0	0	0	0	10	0	10	17	0	0	0	17	0	0	0	0	0	27
03:30 PM	0	0	0	0	0	0	0	5	0	5	13	0	0	0	13	0	0	0	0	0	18
03:45 PM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	11
Total	0	0	0	0	0	0	0	19	0	19	53	0	0	0	53	0	0	0	0	0	72
04:00 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	8
04:15 PM	0	0	0	0	0	0	0	1	0	1	12	0	0	0	12	0	0	0	0	0	13
04:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	19	0	19	7	0	0	0	7	0	0	0	0	0	26
Total	0	0	0	0	0	0	0	20	0	20	30	0	0	0	30	0	0	0	0	0	50
05:00 PM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	11
05:15 PM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	12	0	0	0	0	0	12
05:30 PM	0	0	0	0	0	0	0	0	0	0	18	0	0	0	18	0	0	0	0	0	18
05:45 PM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	0	0	0	0	0	17
Total	0	0	0	0	0	0	0	0	0	0	58	0	0	0	58	0	0	0	0	0	58
Grand Total	0	0	0	0	0	0	0	39	0	39	141	0	0	0	141	0	0	0	0	0	180
Apprch %	0	0	0	0		0	0	100	0		100	0	0	0		0	0	0	0		
Total %	0	0	0	0	0	0	0	21.7	0	21.7	78.3	0	0	0	78.3	0	0	0	0	0	

	Southbound					Kapiolani Boulevard Right = Right Turn To Kamoku Street Westbound					Date Street Left = Left Turn To Kamoku Street Northbound					Eastbound					
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	Int. Total
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																					
03:00 PM	0	0	0	0	0	0	0	4	0	4	12	0	0	0	12	0	0	0	0	0	16
03:15 PM	0	0	0	0	0	0	0	**10**	0	**10**	**17**	0	0	0	**17**	0	0	0	0	0	**27**
03:30 PM	0	0	0	0	0	0	0	5	0	5	13	0	0	0	13	0	0	0	0	0	18
03:45 PM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	11
Total Volume	0	0	0	0	0	0	0	19	0	19	53	0	0	0	53	0	0	0	0	0	72
% App. Total	0	0	0	0		0	0	100	0		100	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.475	.000	.475	.779	.000	.000	.000	.779	.000	.000	.000	.000	.000	.667

DRAFT

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

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

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

DRAFT

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

	Ward Avenue Southbound					Kinau Street Westbound					Ward Avenue Northbound					Kinau Street Eastbound					
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	Int. Total
03:00 PM	36	84	0	3	123	0	0	0	11	11	0	177	6	10	193	81	237	66	7	391	718
03:15 PM	32	76	0	1	109	0	0	0	10	10	0	208	7	6	221	78	234	89	12	413	753
03:30 PM	23	84	0	5	112	0	0	0	8	8	0	209	6	13	228	83	245	97	16	441	789
03:45 PM	27	88	0	4	119	0	0	0	14	14	0	209	10	7	226	96	246	86	9	437	796
Total	118	332	0	13	463	0	0	0	43	43	0	803	29	36	868	338	962	338	44	1682	3056
04:00 PM	27	98	0	1	126	0	0	0	9	9	0	215	7	5	227	89	268	106	27	490	852
04:15 PM	23	78	0	4	105	0	0	0	10	10	0	231	4	5	240	81	259	113	11	464	819
04:30 PM	25	120	0	1	146	0	0	0	24	24	0	211	7	14	232	99	287	103	7	496	898
04:45 PM	23	92	0	0	115	0	0	0	13	13	0	245	5	14	264	111	261	89	31	492	884
Total	98	388	0	6	492	0	0	0	56	56	0	902	23	38	963	380	1075	411	76	1942	3453
05:00 PM	25	91	0	1	117	0	0	0	14	14	0	226	14	13	253	103	204	90	24	421	805
05:15 PM	42	89	0	1	132	0	0	0	11	11	0	239	4	11	254	119	216	101	15	451	848
05:30 PM	27	87	0	0	114	0	0	0	14	14	0	217	13	7	237	88	244	83	3	418	783
05:45 PM	39	110	0	0	149	0	0	0	9	9	0	231	5	7	243	84	211	118	6	419	820
Total	133	377	0	2	512	0	0	0	48	48	0	913	36	38	987	394	875	392	48	1709	3256
Grand Total	349	1097	0	21	1467	0	0	0	147	147	0	2618	88	112	2818	1112	2912	1141	168	5333	9765
Apprch %	23.8	74.8	0	1.4		0	0	0	100		0	92.9	3.1	4		20.9	54.6	21.4	3.2		
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	

	Ward Avenue Southbound				Kinau Street Westbound				Ward Avenue Northbound				Kinau Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:00 PM	**27**	98	0	125	0	0	0	0	0	215	**7**	222	89	268	106	463	810
04:15 PM	23	78	0	101	0	0	0	0	0	231	4	235	81	259	**113**	453	789
04:30 PM	25	**120**	0	**145**	0	0	0	0	0	211	7	218	99	**287**	103	**489**	**852**
04:45 PM	23	92	0	115	0	0	0	0	0	**245**	5	**250**	**111**	261	89	461	826
Total Volume	98	388	0	486	0	0	0	0	0	902	23	925	380	1075	411	1866	3277
% App. Total	20.2	79.8	0		0	0	0		0	97.5	2.5		20.4	57.6	22		
PHF	.907	.808	.000	.838	.000	.000	.000	.000	.000	.920	.821	.925	.856	.936	.909	.954	.962

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Ward Avenue Southbound					S. Beretania Street Westbound					Ward Avenue Northbound					S. Beretania Street Eastbound					
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	Int. Total
06:00 AM	0	119	62	6	187	25	181	1	6	213	0	38	0	7	45	0	0	0	3	3	448
06:15 AM	0	149	72	6	227	34	230	0	8	272	0	30	0	10	40	0	0	0	18	18	557
06:30 AM	0	153	77	16	246	47	301	0	7	355	2	45	0	22	69	0	0	0	21	21	691
06:45 AM	0	168	83	22	273	73	426	2	16	517	0	68	0	12	80	0	0	0	25	25	895
Total	0	589	294	50	933	179	1138	3	37	1357	2	181	0	51	234	0	0	0	67	67	2591
07:00 AM	0	175	68	16	259	78	520	2	12	612	0	88	0	3	91	0	0	0	19	19	981
07:15 AM	0	175	94	12	281	65	597	0	8	670	0	109	0	8	117	0	0	0	25	25	1093
07:30 AM	0	213	105	27	345	73	652	0	22	747	0	101	0	20	121	0	0	0	35	35	1248
07:45 AM	0	181	99	21	301	87	653	1	21	762	0	90	0	26	116	0	0	0	34	34	1213
Total	0	744	366	76	1186	303	2422	3	63	2791	0	388	0	57	445	0	0	0	113	113	4535
08:00 AM	0	222	92	20	334	91	600	2	21	714	0	87	0	8	95	0	0	0	14	14	1157
08:15 AM	0	173	115	15	303	69	528	0	10	607	0	93	0	8	101	0	0	0	5	5	1016
08:30 AM	0	163	80	15	258	73	400	0	13	486	0	82	0	12	94	0	0	0	14	14	852
08:45 AM	0	107	42	11	160	79	383	0	6	468	0	99	0	18	117	0	0	0	2	2	747
Total	0	665	329	61	1055	312	1911	2	50	2275	0	361	0	46	407	0	0	0	35	35	3772
Grand Total	0	1998	989	187	3174	794	5471	8	150	6423	2	930	0	154	1086	0	0	0	215	215	10898
Apprch %	0	62.9	31.2	5.9		12.4	85.2	0.1	2.3		0.2	85.6	0	14.2		0	0	0	100		
Total %	0	18.3	9.1	1.7	29.1	7.3	50.2	0.1	1.4	58.9	0	8.5	0	1.4	10	0	0	0	2	2	

	Ward Avenue Southbound				S. Beretania Street Westbound				Ward Avenue Northbound				S. Beretania Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	0	175	94	269	65	597	0	662	0	**109**	0	**109**	0	0	0	0	1040
07:30 AM	0	213	**105**	**318**	73	652	0	725	0	101	0	101	0	0	0	0	**1144**
07:45 AM	0	181	99	280	87	**653**	1	**741**	0	90	0	90	0	0	0	0	1111
08:00 AM	0	**222**	92	314	**91**	600	**2**	693	0	87	0	87	0	0	0	0	1094
Total Volume	0	791	390	1181	316	2502	3	2821	0	387	0	387	0	0	0	0	4389
% App. Total	0	67	33		11.2	88.7	0.1		0	100	0		0	0	0		
PHF	.000	.891	.929	.928	.868	.958	.375	.952	.000	.888	.000	.888	.000	.000	.000	.000	.959

DRAFT

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

	Ward Avenue Southbound					S. Beretania Street Westbound					Ward Avenue Northbound					S. Beretania Street Eastbound					
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	Int. Total
03:00 PM	0	100	18	9	127	53	325	25	9	412	0	142	0	16	158	0	0	0	11	11	708
03:15 PM	0	144	34	9	187	67	440	30	15	552	1	190	0	10	201	0	0	0	13	13	953
03:30 PM	0	138	32	14	184	69	433	43	9	554	0	174	0	15	189	0	0	0	24	24	951
03:45 PM	0	136	30	15	181	78	482	47	12	619	0	164	0	8	172	0	0	0	24	24	996
Total	0	518	114	47	679	267	1680	145	45	2137	1	670	0	49	720	0	0	0	72	72	3608
04:00 PM	0	151	55	12	218	88	403	36	11	538	0	208	0	10	218	0	0	0	10	10	984
04:15 PM	0	151	37	6	194	89	474	37	7	607	0	190	0	10	200	0	0	0	12	12	1013
04:30 PM	0	178	38	23	239	81	502	62	25	670	0	189	0	14	203	0	0	0	21	21	1133
04:45 PM	0	152	35	16	203	92	487	71	16	666	0	173	0	19	192	0	0	0	29	29	1090
Total	0	632	165	57	854	350	1866	206	59	2481	0	760	0	53	813	0	0	0	72	72	4220
05:00 PM	0	153	30	18	201	72	457	88	21	638	0	146	0	4	150	0	0	0	10	10	999
05:15 PM	0	162	22	11	195	69	427	75	16	587	0	161	0	8	169	0	0	0	7	7	958
05:30 PM	0	155	22	13	190	68	374	78	18	538	0	119	0	15	134	0	0	0	11	11	873
05:45 PM	0	171	31	9	211	68	350	54	17	489	0	166	0	13	179	0	0	0	11	11	890
Total	0	641	105	51	797	277	1608	295	72	2252	0	592	0	40	632	0	0	0	39	39	3720
Grand Total	0	1791	384	155	2330	894	5154	646	176	6870	1	2022	0	142	2165	0	0	0	183	183	11548
Apprch %	0	76.9	16.5	6.7		13	75	9.4	2.6		0	93.4	0	6.6		0	0	0	100		
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	

	Ward Avenue Southbound				S. Beretania Street Westbound				Ward Avenue Northbound				S. Beretania Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:15 PM	0	151	37	188	89	474	37	600	0	**190**	0	**190**	0	0	0	0	978
04:30 PM	0	**178**	**38**	**216**	81	**502**	62	645	0	189	0	189	0	0	0	0	**1050**
04:45 PM	0	152	35	187	**92**	487	71	**650**	0	173	0	173	0	0	0	0	1010
05:00 PM	0	153	30	183	72	457	**88**	617	0	146	0	146	0	0	0	0	946
Total Volume	0	634	140	774	334	1920	258	2512	0	698	0	698	0	0	0	0	3984
% App. Total	0	81.9	18.1		13.3	76.4	10.3		0	100	0		0	0	0		
PHF	.000	.890	.921	.896	.908	.956	.733	.966	.000	.918	.000	.918	.000	.000	.000	.000	.949

DRAFT

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

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

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

DRAFT

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

	Ward Avenue Southbound					Westbound	Ward Avenue Northbound					Hotel Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	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	16	149	0	10	175	14	0	11	22	47	407
03:15 PM	0	150	50	2	202	0	11	172	0	9	192	10	0	12	22	44	438
03:30 PM	0	164	38	3	205	0	10	168	0	7	185	10	0	15	40	65	455
03:45 PM	0	182	39	3	224	0	0	163	0	2	165	4	0	13	24	41	430
Total	0	629	177	10	816	0	37	652	0	28	717	38	0	51	108	197	1730
04:00 PM	0	190	52	5	247	0	3	171	0	3	177	18	0	13	46	77	501
04:15 PM	0	185	44	3	232	0	6	184	0	5	195	15	0	16	20	51	478
04:30 PM	0	225	39	7	271	0	7	146	0	9	162	20	0	17	43	80	513
04:45 PM	0	210	31	8	249	0	3	138	0	6	147	26	0	27	30	83	479
Total	0	810	166	23	999	0	19	639	0	23	681	79	0	73	139	291	1971
05:00 PM	0	190	26	3	219	0	4	143	0	8	155	13	0	19	30	62	436
05:15 PM	0	202	21	1	224	0	4	160	0	7	171	6	0	12	19	37	432
05:30 PM	0	193	22	3	218	0	12	140	0	8	160	6	0	10	27	43	421
05:45 PM	0	214	19	2	235	0	11	179	0	5	195	8	0	11	9	28	458
Total	0	799	88	9	896	0	31	622	0	28	681	33	0	52	85	170	1747
Grand Total	0	2238	431	42	2711	0	87	1913	0	79	2079	150	0	176	332	658	5448
Apprch %	0	82.6	15.9	1.5			4.2	92	0	3.8		22.8	0	26.7	50.5		
Total %	0	41.1	7.9	0.8	49.8	0	1.6	35.1	0	1.5	38.2	2.8	0	3.2	6.1	12.1	

	Ward Avenue Southbound				Westbound	Ward Avenue Northbound				Hotel Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:00 PM	0	190	**52**	242	0	3	171	0	174	18	0	13	31	447
04:15 PM	0	185	44	229	0	6	**184**	0	**190**	15	0	16	31	450
04:30 PM	0	**225**	39	**264**	0	**7**	146	0	153	20	0	17	37	**454**
04:45 PM	0	210	31	241	0	3	138	0	141	**26**	0	**27**	**53**	435
Total Volume	0	810	166	976	0	19	639	0	658	79	0	73	152	1786
% App. Total	0	83	17			2.9	97.1	0		52	0	48		
PHF	.000	.900	.798	.924	.000	.679	.868	.000	.866	.760	.000	.676	.717	.983

DRAFT

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

	Ward Avenue Southbound					S. King Street Westbound					Ward Avenue Northbound					S. King Street Eastbound					
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	Int. Total
06:00 AM	0	98	0	20	118	0	0	0	19	19	0	14	20	23	57	19	132	14	24	189	383
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
Total	0	522	0	140	662	0	0	0	143	143	0	95	149	155	399	84	948	58	153	1243	2447
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
Total	0	723	0	148	871	0	0	0	147	147	0	212	306	178	696	169	1674	66	184	2093	3807
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
Total	0	805	0	65	870	0	0	0	64	64	0	194	231	65	490	185	1256	98	71	1610	3034
Grand Total	0	2050	0	353	2403	0	0	0	354	354	0	501	686	398	1585	438	3878	222	408	4946	9288
Apprch %	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	

	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	0	151	0	151	0	0	0	0	0	**69**	81	150	44	456	12	512	813
07:30 AM	0	213	0	213	0	0	0	0	0	57	**97**	**154**	**55**	**495**	**25**	**575**	**942**
07:45 AM	0	170	0	170	0	0	0	0	0	40	71	111	30	394	13	437	718
08:00 AM	0	**268**	0	**268**	0	0	0	0	0	42	56	98	36	338	17	391	757
Total Volume	0	802	0	802	0	0	0	0	0	208	305	513	165	1683	67	1915	3230
% App. Total	0	100	0		0	0	0		0	40.5	59.5		8.6	87.9	3.5		
PHF	.000	.748	.000	.748	.000	.000	.000	.000	.000	.754	.786	.833	.750	.850	.670	.833	.857

DRAFT

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

	Ward Avenue Southbound					S. King Street Westbound					Ward Avenue Northbound					S. King Street Eastbound					
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	Int. Total
03:00 PM	0	154	0	19	173	0	0	0	28	28	0	85	67	25	177	69	415	31	18	533	911
03:15 PM	0	156	0	19	175	0	0	0	24	24	0	115	90	35	240	44	448	29	13	534	973
03:30 PM	0	207	0	30	237	0	0	0	30	30	0	100	87	52	239	70	486	19	17	592	1098
03:45 PM	0	199	0	13	212	0	0	0	27	27	0	99	101	51	251	55	477	10	2	544	1034
Total	0	716	0	81	797	0	0	0	109	109	0	399	345	163	907	238	1826	89	50	2203	4016
04:00 PM	0	203	0	21	224	0	0	0	47	47	0	103	90	79	272	57	481	7	22	567	1110
04:15 PM	0	201	0	14	215	0	0	0	33	33	0	115	95	63	273	54	544	2	17	617	1138
04:30 PM	0	243	0	56	299	0	0	0	83	83	0	96	83	105	284	60	658	10	47	775	1441
04:45 PM	0	270	0	36	306	0	0	0	48	48	0	79	74	68	221	64	615	10	31	720	1295
Total	0	917	0	127	1044	0	0	0	211	211	0	393	342	315	1050	235	2298	29	117	2679	4984
05:00 PM	0	213	0	23	236	0	0	0	50	50	0	70	86	81	237	68	622	21	28	739	1262
05:15 PM	0	224	0	32	256	0	0	0	49	49	0	87	97	35	219	65	596	9	15	685	1209
05:30 PM	0	199	0	23	222	0	0	0	31	31	0	77	91	51	219	65	595	8	20	688	1160
05:45 PM	0	241	0	13	254	0	0	0	28	28	0	106	100	61	267	53	663	9	17	742	1291
Total	0	877	0	91	968	0	0	0	158	158	0	340	374	228	942	251	2476	47	80	2854	4922
Grand Total	0	2510	0	299	2809	0	0	0	478	478	0	1132	1061	706	2899	724	6600	165	247	7736	13922
Apprch %	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	20.2	0	0	0	3.4	3.4	0	8.1	7.6	5.1	20.8	5.2	47.4	1.2	1.8	55.6	

	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
04:30 PM	0	243	0	243	0	0	0	0	0	**96**	83	179	60	**658**	10	**728**	**1150**
04:45 PM	0	**270**	0	**270**	0	0	0	0	0	79	74	153	64	615	10	689	1112
05:00 PM	0	213	0	213	0	0	0	0	0	70	86	156	**68**	622	**21**	711	1080
05:15 PM	0	224	0	224	0	0	0	0	0	87	**97**	**184**	65	596	9	670	1078
Total Volume	0	950	0	950	0	0	0	0	0	332	340	672	257	2491	50	2798	4420
% App. Total	0	100	0		0	0	0		0	49.4	50.6		9.2	89	1.8		
PHF	.000	.880	.000	.880	.000	.000	.000	.000	.000	.865	.876	.913	.945	.946	.595	.961	.961

DRAFT

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

	Atkinson Drive Southbound				Kahakai Drive Westbound					Atkinson Drive Northbound					Eastbound	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
06:00 AM	1	108	0	109	6	0	2	4	12	0	23	3	0	26	0	147
06:15 AM	3	122	0	125	6	0	2	10	18	0	34	3	0	37	0	180
06:30 AM	6	168	0	174	10	0	9	8	27	0	51	1	0	52	0	253
06:45 AM	8	179	0	187	7	0	7	7	21	0	66	5	0	71	0	279
Total	18	577	0	595	29	0	20	29	78	0	174	12	0	186	0	859
07:00 AM	10	216	0	226	13	0	10	12	35	0	66	5	0	71	0	332
07:15 AM	11	256	0	267	15	0	11	17	43	0	73	5	0	78	0	388
07:30 AM	10	296	0	306	10	0	9	26	45	0	70	11	0	81	0	432
07:45 AM	32	299	0	331	14	0	22	15	51	0	56	8	0	64	0	446
Total	63	1067	0	1130	52	0	52	70	174	0	265	29	0	294	0	1598
08:00 AM	20	279	0	299	14	0	14	12	40	0	74	6	0	80	0	419
08:15 AM	13	316	0	329	11	0	12	25	48	0	85	7	0	92	0	469
08:30 AM	12	300	0	312	9	0	7	17	33	0	81	6	0	87	0	432
08:45 AM	5	229	0	234	13	0	12	24	49	0	85	5	0	90	0	373
Total	50	1124	0	1174	47	0	45	78	170	0	325	24	0	349	0	1693
Grand Total	131	2768	0	2899	128	0	117	177	422	0	764	65	0	829	0	4150
Apprch %	4.5	95.5	0		30.3	0	27.7	41.9		0	92.2	7.8	0			
Total %	3.2	66.7	0	69.9	3.1	0	2.8	4.3	10.2	0	18.4	1.6	0	20	0	

	Atkinson Drive Southbound				Kahakai Drive Westbound				Atkinson Drive Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	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	**32**	299	0	**331**	**14**	0	**22**	**36**	0	56	**8**	64	0	431
08:00 AM	20	279	0	299	14	0	14	28	0	74	6	80	0	407
08:15 AM	13	**316**	0	329	11	0	12	23	0	**85**	7	**92**	0	**444**
08:30 AM	12	300	0	312	9	0	7	16	0	81	6	87	0	415
Total Volume	77	1194	0	1271	48	0	55	103	0	296	27	323	0	1697
% App. Total	6.1	93.9	0		46.6	0	53.4		0	91.6	8.4			
PHF	.602	.945	.000	.960	.857	.000	.625	.715	.000	.871	.844	.878	.000	.956

DRAFT

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

	Atkinson Drive Southbound					Kahakai Drive Westbound					Northbound	Eastbound	
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	App. Total	Int. 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
Total	22	342	0	0	364	100	0	55	1	156	0	0	520
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
Total	17	363	0	0	380	164	0	105	0	269	0	0	649
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
Total	28	273	0	0	301	68	0	31	0	99	0	0	400
Grand Total	67	978	0	0	1045	332	0	191	1	524	0	0	1569
Apprch %	6.4	93.6	0	0		63.4	0	36.5	0.2				
Total %	4.3	62.3	0	0	66.6	21.2	0	12.2	0.1	33.4	0	0	

	Atkinson Drive Southbound				Kahakai Drive Westbound				Northbound	Eastbound	
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	App. Total	Int. 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	86	29	0	14	43	0	0	129
04:00 PM	4	74	0	78	27	0	27	54	0	0	132
04:15 PM	**7**	97	0	104	53	0	30	83	0	0	187
04:30 PM	0	**125**	0	**125**	**73**	0	**40**	**113**	0	0	**238**
Total Volume	17	376	0	393	182	0	111	293	0	0	686
% App. Total	4.3	95.7	0		62.1	0	37.9				
PHF	.607	.752	.000	.786	.623	.000	.694	.648	.000	.000	.721

DRAFT

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

	Atkinson Drive Southbound					Westbound	Atkinson Drive Northbound					Kona Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	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	11	26	0	0	37	0	0	10	7	17	171
06:15 AM	0	110	16	0	126	0	13	36	0	0	49	0	0	14	19	33	208
06:30 AM	0	143	22	0	165	0	16	53	0	0	69	0	0	8	13	21	255
06:45 AM	0	157	27	0	184	0	23	72	0	0	95	0	0	8	7	15	294
Total	0	518	74	0	592	0	63	187	0	0	250	0	0	40	46	86	928
07:00 AM	0	189	31	0	220	0	25	71	0	0	96	0	0	9	11	20	336
07:15 AM	0	226	25	0	251	0	22	78	0	0	100	0	0	24	19	43	394
07:30 AM	0	272	31	0	303	0	40	81	0	0	121	0	0	24	26	50	474
07:45 AM	0	259	43	0	302	0	23	64	0	0	87	0	0	9	42	51	440
Total	0	946	130	0	1076	0	110	294	0	0	404	0	0	66	98	164	1644
08:00 AM	0	245	38	0	283	0	17	80	0	0	97	0	0	17	33	50	430
08:15 AM	0	276	46	0	322	0	39	92	0	0	131	0	0	16	39	55	508
08:30 AM	0	263	34	0	297	0	31	87	0	0	118	0	0	27	19	46	461
08:45 AM	0	196	30	0	226	0	24	89	0	0	113	0	0	10	11	21	360
Total	0	980	148	0	1128	0	111	348	0	0	459	0	0	70	102	172	1759
Grand Total	0	2444	352	0	2796	0	284	829	0	0	1113	0	0	176	246	422	4331
Apprch %	0	87.4	12.6	0			25.5	74.5	0	0		0	0	41.7	58.3		
Total %	0	56.4	8.1	0	64.6	0	6.6	19.1	0	0	25.7	0	0	4.1	5.7	9.7	

	Atkinson Drive Southbound				Westbound	Atkinson Drive Northbound				Kona Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM														
07:30 AM	0	272	31	303	0	**40**	81	0	121	0	0	**24**	**24**	448
07:45 AM	0	259	43	302	0	23	64	0	87	0	0	9	9	398
08:00 AM	0	245	38	283	0	17	80	0	97	0	0	17	17	397
08:15 AM	0	**276**	**46**	**322**	0	39	**92**	0	**131**	0	0	16	16	**469**
Total Volume	0	1052	158	1210	0	119	317	0	436	0	0	66	66	1712
% App. Total	0	86.9	13.1			27.3	72.7	0		0	0	100		
PHF	.000	.953	.859	.939	.000	.744	.861	.000	.832	.000	.000	.688	.688	.913

DRAFT

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

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

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

DRAFT

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

Groups Printed- Unshifted

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

DRAFT

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound				Westbound	Atkinson Drive (Numbers In left Column Indicates Left Turn Into Mahukona Street) Northbound				Mahukona Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 08:00 AM														
08:00 AM	0	**204**	29	**233**	0	**37**	73	0	110	13	0	**45**	58	**401**
08:15 AM	0	182	46	228	0	26	**89**	0	**115**	10	0	32	42	385
08:30 AM	0	156	35	191	0	31	68	**8**	107	**21**	0	25	46	344
08:45 AM	0	149	**58**	207	0	22	69	0	91	20	**1**	42	**63**	361
Total Volume	0	691	168	859	0	116	299	8	423	64	1	144	209	1491
% App. Total	0	80.4	19.6			27.4	70.7	1.9		30.6	0.5	68.9		
PHF	.000	.847	.724	.922	.000	.784	.840	.250	.920	.762	.250	.800	.829	.930

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

Groups Printed- Unshifted

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

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Up Ramp) Southbound				Westbound	Atkinson Drive (Numbers In Left Column Indicates Left Turn Up Ramp) Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	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 07:30 AM											
07:30 AM	0	0	17	17	0	4	0	0	4	0	21
07:45 AM	0	0	**18**	**18**	0	**11**	0	0	**11**	0	**29**
08:00 AM	0	0	8	8	0	6	0	0	6	0	14
08:15 AM	0	0	9	9	0	10	0	0	10	0	19
Total Volume	0	0	52	52	0	31	0	0	31	0	83
% App. Total	0	0	100			100	0	0			
PHF	.000	.000	.722	.722	.000	.705	.000	.000	.705	.000	.716

DRAFT

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

Groups Printed- Unshifted

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound					Westbound	Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound					Mahukona Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	92	35	0	127	0	33	95	0	24	152	73	0	86	17	176	455
03:15 PM	0	54	6	0	60	0	30	97	0	32	159	78	0	87	21	186	405
03:30 PM	0	50	12	0	62	0	33	127	0	30	190	69	0	103	21	193	445
03:45 PM	0	43	5	0	48	0	45	110	0	29	184	70	0	69	34	173	405
Total	0	239	58	0	297	0	141	429	0	115	685	290	0	345	93	728	1710
04:00 PM	0	69	8	0	77	0	35	92	0	45	172	83	0	82	25	190	439
04:15 PM	0	45	11	0	56	0	37	128	0	38	203	101	0	81	15	197	456
04:30 PM	0	64	5	0	69	0	23	116	0	40	179	90	0	81	33	204	452
04:45 PM	0	75	12	0	87	0	34	122	0	51	207	55	0	85	32	172	466
Total	0	253	36	0	289	0	129	458	0	174	761	329	0	329	105	763	1813
05:00 PM	0	64	12	0	76	0	29	123	0	34	186	76	0	91	29	196	458
05:15 PM	0	62	8	0	70	0	33	107	0	34	174	97	1	77	29	204	448
05:30 PM	0	47	10	0	57	0	20	122	0	41	183	80	0	87	25	192	432
05:45 PM	0	56	11	0	67	0	19	121	0	32	172	77	0	92	19	188	427
Total	0	229	41	0	270	0	101	473	0	141	715	330	1	347	102	780	1765
Grand Total	0	721	135	0	856	0	371	1360	0	430	2161	949	1	1021	300	2271	5288
Apprch %	0	84.2	15.8	0			17.2	62.9	0	19.9		41.8	0	45	13.2		
Total %	0	13.6	2.6	0	16.2	0	7	25.7	0	8.1	40.9	17.9	0	19.3	5.7	42.9	

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Into Mahukona Street) Southbound				Westbound	Atkinson Drive (Numbers In Left Column Indicates Left Turn Into Mahukona Street) Northbound				Mahukona Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:15 PM	0	45	11	56	0	**37**	**128**	0	**165**	**101**	0	81	**182**	**403**
04:30 PM	0	64	5	69	0	23	116	0	139	90	0	81	171	379
04:45 PM	0	**75**	**12**	**87**	0	34	122	0	156	55	0	85	140	383
05:00 PM	0	64	12	76	0	29	123	0	152	76	0	**91**	167	395
Total Volume	0	248	40	288	0	123	489	0	612	322	0	338	660	1560
% App. Total	0	86.1	13.9			20.1	79.9	0		48.8	0	51.2		
PHF	.000	.827	.833	.828	.000	.831	.955	.000	.927	.797	.000	.929	.907	.968

DRAFT

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-1
Site Code : 00000001
Start Date : 8/30/2012
Page No : 1

Groups Printed- Unshifted

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Up Ramp) Southbound					Westbound	Atkinson Drive (Numbers In Left Column Indicates Left Turn Up Ramp) Northbound					Eastbound	
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
03:00 PM	0	0	12	0	12	0	11	0	0	0	11	0	23
03:15 PM	0	0	3	0	3	0	17	0	0	0	17	0	20
03:30 PM	0	0	7	0	7	0	16	0	0	0	16	0	23
03:45 PM	0	0	6	0	6	0	19	0	0	0	19	0	25
Total	0	0	28	0	28	0	63	0	0	0	63	0	91
04:00 PM	0	0	5	0	5	0	19	0	0	0	19	0	24
04:15 PM	0	0	5	0	5	0	33	0	0	0	33	0	38
04:30 PM	0	0	6	0	6	0	22	0	0	0	22	0	28
04:45 PM	0	0	6	0	6	0	28	0	0	0	28	0	34
Total	0	0	22	0	22	0	102	0	0	0	102	0	124
05:00 PM	0	0	7	0	7	0	31	0	0	0	31	0	38
05:15 PM	0	0	4	0	4	0	23	0	0	0	23	0	27
05:30 PM	0	0	3	0	3	0	17	0	0	0	17	0	20
05:45 PM	0	0	7	0	7	0	26	0	0	0	26	0	33
Total	0	0	21	0	21	0	97	0	0	0	97	0	118
Grand Total	0	0	71	0	71	0	262	0	0	0	262	0	333
Apprch %	0	0	100	0			100	0	0	0			
Total %	0	0	21.3	0	21.3	0	78.7	0	0	0	78.7	0	

	Atkinson Drive (Numbers In Right Column Indicates Right Turn Up Ramp) Southbound				Westbound	Atkinson Drive (Numbers In Left Column Indicates Left Turn Up Ramp) Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
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											
04:15 PM	0	0	5	5	0	**33**	0	0	**33**	0	**38**
04:30 PM	0	0	6	6	0	22	0	0	22	0	28
04:45 PM	0	0	6	6	0	28	0	0	28	0	34
05:00 PM	0	0	**7**	**7**	0	31	0	0	31	0	38
Total Volume	0	0	24	24	0	114	0	0	114	0	138
% App. Total	0	0	100			100	0	0			
PHF	.000	.000	.857	.857	.000	.864	.000	.000	.864	.000	.908

DRAFT

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 : 00000001
Start Date : 8/30/2012
Page No : 1

Groups Printed- Unshifted

	Atkinson Drive Southbound					Ala Moana Boulevard Westbound					Ala Moana Park Drive Northbound					Ala Moana Boulevard Eastbound					
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	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
Apprch %	15.7	15.4	57.2	11.7		3.7	86.8	9.5	0		29.7	31.1	18.9	20.3		16.4	68.6	4.1	10.9		
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	

DRAFT

	Atkinson Drive Southbound				Ala Moana Boulevard Westbound				Ala Moana Park Drive Northbound				Ala Moana Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
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		3.6	86.6	9.8		42.9	36.7	20.3		18.6	78.3	3.2		
PHF	.658	.750	.918	.915	.557	.923	.853	.950	.792	.813	.750	.922	.883	.901	.750	.952	.941

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

Groups Printed- Unshifted

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

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

DRAFT

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

	Atkinson Drive Southbound					Ala Moana Boulevard Westbound					Ala Moana Park Drive Northbound					Ala Moana Boulevard Eastbound					
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	Int. 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	1564	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		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	8	6.9	28.6	1.5	4.9	42	

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

DRAFT

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

	Atkinson Drive Southbound (Column Indicates Pedestrian Count In X-Walk Numbers In Peds At Right Turn Lanes)					Westbound	Northbound	Eastbound	
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	App. Total	App. Total	Int. Total
03:00 PM	0	0	0	41	41	0	0	0	41
03:15 PM	0	0	0	59	59	0	0	0	59
03:30 PM	0	0	0	65	65	0	0	0	65
03:45 PM	0	0	0	56	56	0	0	0	56
Total	0	0	0	221	221	0	0	0	221
04:00 PM	0	0	0	88	88	0	0	0	88
04:15 PM	0	0	0	72	72	0	0	0	72
04:30 PM	0	0	0	65	65	0	0	0	65
04:45 PM	0	0	0	87	87	0	0	0	87
Total	0	0	0	312	312	0	0	0	312
05:00 PM	0	0	0	83	83	0	0	0	83
05:15 PM	0	0	0	59	59	0	0	0	59
05:30 PM	0	0	0	142	142	0	0	0	142
05:45 PM	0	0	0	94	94	0	0	0	94
Total	0	0	0	378	378	0	0	0	378
Grand Total	0	0	0	911	911	0	0	0	911
Apprch %	0	0	0	100					
Total %	0	0	0	100	100	0	0	0	

DRAFT

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

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

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

	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				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	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 06:15 AM														
06:15 AM	72	0	**33**	105	0	96	36	132	0	65	329	0	394	631
06:30 AM	**115**	0	31	**146**	0	118	**39**	157	0	**78**	**374**	0	**452**	**755**
06:45 AM	98	0	32	130	0	**128**	31	**159**	0	44	363	0	407	696
07:00 AM	103	0	33	136	0	118	30	148	0	73	330	0	403	687
Total Volume	388	0	129	517	0	460	136	596	0	260	1396	0	1656	2769
% App. Total	75	0	25		0	77.2	22.8			15.7	84.3	0		
PHF	.843	.000	.977	.885	.000	.898	.872	.937	.000	.833	.933	.000	.916	.917

DRAFT

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

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

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

DRAFT

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

	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					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	82	0	23	0	105	0	152	71	0	223	0	60	210	0	0	270	598
03:15 PM	65	0	28	0	93	0	187	67	0	254	0	67	228	0	0	295	642
03:30 PM	71	0	14	0	85	0	251	62	1	314	0	63	175	0	0	238	637
03:45 PM	84	0	28	0	112	0	218	58	0	276	0	40	186	0	0	226	614
Total	302	0	93	0	395	0	808	258	1	1067	0	230	799	0	0	1029	2491
04:00 PM	81	0	16	0	97	0	250	50	0	300	0	27	191	0	0	218	615
04:15 PM	71	0	33	0	104	0	252	89	5	346	0	45	159	0	0	204	654
04:30 PM	77	0	29	0	106	0	267	73	0	340	0	28	142	0	0	170	616
04:45 PM	69	0	30	0	99	0	281	69	0	350	0	28	165	0	0	193	642
Total	298	0	108	0	406	0	1050	281	5	1336	0	128	657	0	0	785	2527
05:00 PM	67	0	32	0	99	0	237	58	0	295	0	30	127	0	0	157	551
05:15 PM	61	0	29	0	90	0	277	71	2	350	0	38	123	0	0	161	601
05:30 PM	57	0	34	0	91	0	210	55	0	265	0	39	126	0	0	165	521
05:45 PM	44	0	22	0	66	0	224	66	0	290	0	19	94	0	0	113	469
Total	229	0	117	0	346	0	948	250	2	1200	0	126	470	0	0	596	2142
Grand Total	829	0	318	0	1147	0	2806	789	8	3603	0	484	1926	0	0	2410	7160
Apprch %	72.3	0	27.7	0		0	77.9	21.9	0.2			20.1	79.9	0	0		
Total %	11.6	0	4.4	0	16	0	39.2	11	0.1	50.3	0	6.8	26.9	0	0	33.7	

	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				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:00 PM	**81**	0	16	97	0	250	50	300	0	27	**191**	0	**218**	615
04:15 PM	71	0	**33**	104	0	252	**89**	341	0	**45**	159	0	204	**649**
04:30 PM	77	0	29	**106**	0	267	73	340	0	28	142	0	170	616
04:45 PM	69	0	30	99	0	**281**	69	**350**	0	28	165	0	193	642
Total Volume	298	0	108	406	0	1050	281	1331	0	128	657	0	785	2522
% App. Total	73.4	0	26.6		0	78.9	21.1			16.3	83.7	0		
PHF	.920	.000	.818	.958	.000	.934	.789	.951	.000	.711	.860	.000	.900	.971

DRAFT

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

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

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Laumaka Street Southbound					Dillingham Boulevard Westbound					OCCC Employee Parking Driveway Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	47	4.3	23.8	24.9		2.2	85.6	10.2	1.9		39.7	15.4	43.6	1.3		4.3	94.6	1.1	0		
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	71.6	

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

DRAFT

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

Groups Printed- Unshifted

	Laumaka Street Southbound					Dillingham Boulevard Westbound					OCCC Employee Parking Driveway Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	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	

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Puuhale Road Southbound					Dillingham Boulevard Westbound					Puuhale Road Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	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	

	Puuhale Road Southbound				Dillingham Boulevard Westbound				Puuhale Road Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	3	21	12	36	11	157	0	168	19	0	8	27	0	**387**	**199**	**586**	**817**
07:30 AM	**9**	22	**20**	**51**	**13**	126	0	139	36	0	11	47	0	378	192	570	807
07:45 AM	4	14	15	33	12	**160**	0	**172**	**51**	0	**15**	**66**	0	349	192	541	812
08:00 AM	4	**23**	16	43	3	130	0	133	45	0	6	51	0	359	188	547	774
Total Volume	20	80	63	163	39	573	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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

File Name : DilPuu PM
Site Code : 00000002
Start Date : 1/15/2013
Page No : 1

Groups Printed- Unshifted

	Puuhale Road Southbound					Dillingham Boulevard Westbound					Puuhale Road Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	8	6	14	5	33	11	245	0	11	267	56	1	7	3	67	0	191	38	14	243	610
03:15 PM	7	20	17	5	49	2	211	0	8	221	50	0	40	5	95	0	122	152	14	288	653
03:30 PM	7	17	22	7	53	10	266	0	15	291	70	0	25	1	96	0	58	59	5	122	562
03:45 PM	8	18	21	15	62	12	288	0	21	321	67	0	31	1	99	0	339	122	12	473	955
Total	30	61	74	32	197	35	1010	0	55	1100	243	1	103	10	357	0	710	371	45	1126	2780
04:00 PM	11	14	19	6	50	4	247	0	13	264	74	0	18	3	95	0	336	67	8	411	820
04:15 PM	11	12	13	3	39	6	212	0	7	225	47	0	13	2	62	0	311	62	11	384	710
04:30 PM	11	7	13	7	38	9	276	0	15	300	60	0	19	0	79	0	316	83	13	412	829
04:45 PM	3	8	20	5	36	5	256	0	8	269	51	0	22	1	74	0	299	62	11	372	751
Total	36	41	65	21	163	24	991	0	43	1058	232	0	72	6	310	0	1262	274	43	1579	3110
05:00 PM	13	8	17	8	46	5	247	1	12	265	57	0	16	3	76	0	314	49	7	370	757
05:15 PM	4	6	15	5	30	7	255	0	7	269	47	0	26	1	74	0	331	42	9	382	755
05:30 PM	5	7	17	6	35	9	212	0	12	233	38	0	11	2	51	0	297	31	7	335	654
05:45 PM	10	6	20	5	41	6	242	0	16	264	47	0	11	3	61	0	166	30	6	202	568
Total	32	27	69	24	152	27	956	1	47	1031	189	0	64	9	262	0	1108	152	29	1289	2734
Grand Total	98	129	208	77	512	86	2957	1	145	3189	664	1	239	25	929	0	3080	797	117	3994	8624
Apprch %	19.1	25.2	40.6	15		2.7	92.7	0	4.5		71.5	0.1	25.7	2.7		0	77.1	20	2.9		
Total %	1.1	1.5	2.4	0.9	5.9	1	34.3	0	1.7	37	7.7	0	2.8	0.3	10.8	0	35.7	9.2	1.4	46.3	

	Puuhale Road Southbound				Dillingham Boulevard Westbound				Puuhale Road Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. 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	8	**18**	**21**	**47**	**12**	**288**	0	**300**	67	0	**31**	**98**	0	**339**	**122**	**461**	**906**
04:00 PM	**11**	14	19	44	4	247	0	251	**74**	0	18	92	0	336	67	403	790
04:15 PM	11	12	13	36	6	212	0	218	47	0	13	60	0	311	62	373	687
04:30 PM	11	7	13	31	9	276	0	285	60	0	19	79	0	316	83	399	794
Total Volume	41	51	66	158	31	1023	0	1054	248	0	81	329	0	1302	334	1636	3177
% App. Total	25.9	32.3	41.8		2.9	97.1	0		75.4	0	24.6		0	79.6	20.4		
PHF	.932	.708	.786	.840	.646	.888	.000	.878	.838	.000	.653	.839	.000	.960	.684	.887	.877

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Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

File Name : DilMok AM
Site Code : 00000000
Start Date : 1/15/2013
Page No : 1

Groups Printed- Unshifted

	Mokauea Street Southbound					Dillingham Boulevard Westbound					Mokauea Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
06:00 AM	7	31	16	9	63	5	65	5	8	83	9	25	11	4	49	18	195	6	5	224	419
06:15 AM	3	25	16	13	57	3	82	4	20	109	9	15	10	3	37	15	202	10	4	231	434
06:30 AM	6	24	10	13	53	2	80	8	16	106	12	18	4	2	36	16	340	9	11	376	571
06:45 AM	8	24	3	8	43	3	98	4	7	112	5	10	7	3	25	18	374	6	10	408	588
Total	24	104	45	43	216	13	325	21	51	410	35	68	32	12	147	67	1111	31	30	1239	2012
07:00 AM	7	27	12	10	56	1	83	3	10	97	11	16	9	4	40	16	385	3	8	412	605
07:15 AM	14	24	12	8	58	3	119	9	8	139	20	17	11	5	53	26	379	2	3	410	660
07:30 AM	15	28	10	2	55	5	120	6	17	148	7	14	10	5	36	17	370	7	9	403	642
07:45 AM	20	28	20	6	74	5	131	4	17	157	20	19	16	3	58	9	333	10	5	357	646
Total	56	107	54	26	243	14	453	22	52	541	58	66	46	17	187	68	1467	22	25	1582	2553
08:00 AM	13	26	12	10	61	2	101	12	5	120	11	21	9	4	45	13	361	6	2	382	608
08:15 AM	13	19	5	14	51	7	125	3	20	155	14	21	18	1	54	17	363	14	10	404	664
08:30 AM	13	20	10	1	44	5	123	7	6	141	11	20	11	2	44	19	348	8	2	377	606
08:45 AM	13	12	7	7	39	2	144	13	19	178	14	19	9	3	45	12	273	9	8	302	564
Total	52	77	34	32	195	16	493	35	50	594	50	81	47	10	188	61	1345	37	22	1465	2442
Grand Total	132	288	133	101	654	43	1271	78	153	1545	143	215	125	39	522	196	3923	90	77	4286	7007
Apprch %	20.2	44	20.3	15.4		2.8	82.3	5	9.9		27.4	41.2	23.9	7.5		4.6	91.5	2.1	1.8		
Total %	1.9	4.1	1.9	1.4	9.3	0.6	18.1	1.1	2.2	22	2	3.1	1.8	0.6	7.4	2.8	56	1.3	1.1	61.2	

	Mokauea Street Southbound				Dillingham Boulevard Westbound				Mokauea Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	14	24	12	50	3	119	9	131	**20**	17	11	48	**26**	**379**	2	**407**	**636**
07:30 AM	15	**28**	10	53	**5**	120	6	131	7	14	10	31	17	370	7	394	609
07:45 AM	**20**	28	**20**	**68**	5	**131**	4	**140**	20	19	**16**	**55**	9	333	**10**	352	615
08:00 AM	13	26	12	51	2	101	**12**	115	11	**21**	9	41	13	361	6	380	587
Total Volume	62	106	54	222	15	471	31	517	58	71	46	175	65	1443	25	1533	2447
% App. Total	27.9	47.7	24.3		2.9	91.1	6		33.1	40.6	26.3		4.2	94.1	1.6		
PHF	.775	.946	.675	.816	.750	.899	.646	.923	.725	.845	.719	.795	.625	.952	.625	.942	.962

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Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Mokauea Street Southbound					Dillingham Boulevard Westbound					Mokauea Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	10	16	9	4	39	6	224	20	15	265	7	48	20	3	78	10	211	7	6	234	616
03:15 PM	13	22	5	5	45	1	174	26	15	216	9	44	15	2	70	51	89	5	4	149	480
03:30 PM	10	35	14	6	65	8	226	30	29	293	15	52	20	3	90	32	67	6	2	107	555
03:45 PM	12	35	13	11	71	10	263	20	32	325	18	62	11	9	100	23	328	11	4	366	862
Total	45	108	41	26	220	25	887	96	91	1099	49	206	66	17	338	116	695	29	16	856	2513
04:00 PM	12	21	13	7	53	3	205	19	18	245	13	63	18	5	99	39	321	8	9	377	774
04:15 PM	17	27	5	7	56	3	200	21	28	252	16	48	20	5	89	29	300	10	12	351	748
04:30 PM	10	15	12	5	42	5	251	25	9	290	16	42	23	1	82	15	326	5	4	350	764
04:45 PM	14	12	5	5	36	7	229	31	19	286	14	53	7	7	81	28	299	3	6	336	739
Total	53	75	35	24	187	18	885	96	74	1073	59	206	68	18	351	111	1246	26	31	1414	3025
05:00 PM	12	13	14	6	45	2	215	25	6	248	15	40	19	5	79	24	312	2	7	345	717
05:15 PM	18	19	18	5	60	2	221	26	12	261	15	34	6	7	62	33	353	5	5	396	779
05:30 PM	12	12	4	7	35	3	182	23	3	211	7	38	12	0	57	21	274	2	11	308	611
05:45 PM	11	6	8	9	34	4	202	14	10	230	12	32	7	5	56	10	171	5	11	197	517
Total	53	50	44	27	174	11	820	88	31	950	49	144	44	17	254	88	1110	14	34	1246	2624
Grand Total	151	233	120	77	581	54	2592	280	196	3122	157	556	178	52	943	315	3051	69	81	3516	8162
Apprch %	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	

	Mokauea Street Southbound				Dillingham Boulevard Westbound				Mokauea Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. 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	12	**35**	**13**	**60**	**10**	**263**	20	**293**	**18**	62	11	91	23	**328**	**11**	362	**806**
04:00 PM	12	21	13	46	3	205	19	227	13	**63**	18	**94**	**39**	321	8	**368**	735
04:15 PM	**17**	27	5	49	3	200	21	224	16	48	20	84	29	300	10	339	696
04:30 PM	10	15	12	37	5	251	**25**	281	16	42	**23**	81	15	326	5	346	745
Total Volume	51	98	43	192	21	919	85	1025	63	215	72	350	106	1275	34	1415	2982
% App. Total	26.6	51	22.4		2	89.7	8.3		18	61.4	20.6		7.5	90.1	2.4		
PHF	.750	.700	.827	.800	.525	.874	.850	.875	.875	.853	.783	.931	.679	.972	.773	.961	.925

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Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kalihi Street Southbound					Dillingham Boulevard Westbound					Kalihi Street Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	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	

	Kalihi Street Southbound				Dillingham Boulevard Westbound				Kalihi Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:00 AM																	
07:00 AM	10	57	6	73	31	87	11	129	1	42	**14**	57	**43**	368	**23**	**434**	693
07:15 AM	**18**	87	**15**	**120**	36	113	24	173	**8**	**85**	4	**97**	21	385	11	417	807
07:30 AM	12	90	5	107	37	130	**33**	**200**	8	72	8	88	14	**397**	9	420	**815**
07:45 AM	12	**98**	8	118	**43**	**138**	19	200	0	58	3	61	13	339	17	369	748
Total Volume	52	332	34	418	147	468	87	702	17	257	29	303	91	1489	60	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	.940

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Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kalihi Street Southbound					Dillingham Boulevard Westbound					Kalihi Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	11	45	14	2	72	23	198	35	0	256	18	97	7	6	128	28	186	18	4	236	692
03:15 PM	9	61	10	4	84	13	160	35	0	208	6	118	6	11	141	35	71	8	1	115	548
03:30 PM	15	55	9	0	79	21	247	42	0	310	9	166	8	1	184	43	65	7	0	115	688
03:45 PM	15	50	12	0	77	17	263	49	2	331	11	125	12	3	151	38	333	11	5	387	946
Total	50	211	45	6	312	74	868	161	2	1105	44	506	33	21	604	144	655	44	10	853	2874
04:00 PM	8	60	13	0	81	18	180	36	2	236	9	107	6	3	125	36	306	18	0	360	802
04:15 PM	6	71	11	5	93	11	237	42	0	290	24	175	2	0	201	38	325	7	0	370	954
04:30 PM	17	51	9	0	77	12	230	43	0	285	10	130	2	1	143	68	294	6	0	368	873
04:45 PM	12	42	10	0	64	10	262	59	0	331	6	109	1	3	119	26	247	10	0	283	797
Total	43	224	43	5	315	51	909	180	2	1142	49	521	11	7	588	168	1172	41	0	1381	3426
05:00 PM	15	39	3	0	57	17	190	57	0	264	6	112	3	0	121	38	283	5	0	326	768
05:15 PM	16	44	7	0	67	11	252	40	0	303	3	117	1	0	121	54	320	6	0	380	871
05:30 PM	19	45	9	0	73	9	167	47	0	223	7	59	4	0	70	43	240	5	0	288	654
05:45 PM	15	40	6	0	61	12	222	43	0	277	6	94	2	3	105	30	177	2	0	209	652
Total	65	168	25	0	258	49	831	187	0	1067	22	382	10	3	417	165	1020	18	0	1203	2945
Grand Total	158	603	113	11	885	174	2608	528	4	3314	115	1409	54	31	1609	477	2847	103	10	3437	9245
Apprch %	17.9	68.1	12.8	1.2		5.3	78.7	15.9	0.1		7.1	87.6	3.4	1.9		13.9	82.8	3	0.3		
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	

	Kalihi Street Southbound				Dillingham Boulevard Westbound				Kalihi Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. 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	15	50	12	77	17	**263**	**49**	**329**	11	125	**12**	148	38	**333**	11	**382**	936
04:00 PM	8	60	**13**	81	**18**	180	36	234	9	107	6	122	36	306	**18**	360	797
04:15 PM	6	**71**	11	**88**	11	237	42	290	**24**	**175**	2	**201**	38	325	7	370	**949**
04:30 PM	**17**	51	9	77	12	230	43	285	10	130	2	142	**68**	294	6	368	872
Total Volume	46	232	45	323	58	910	170	1138	54	537	22	613	180	1258	42	1480	3554
% App. Total	14.2	71.8	13.9		5.1	80	14.9		8.8	87.6	3.6		12.2	85	2.8		
PHF	.676	.817	.865	.918	.806	.865	.867	.865	.563	.767	.458	.762	.662	.944	.583	.969	.936

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Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	McNeill Street Southbound					Dillingham Boulevard Westbound					McNeill Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
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
Apprch %	9.7	14.5	60	15.9		1.9	89.9	1	7.2		38.9	17.8	36.5	6.8		2.7	91.2	3.8	2.3		
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	

	McNeill Street Southbound				Dillingham Boulevard Westbound				McNeill Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:00 AM																	
07:00 AM	4	4	30	38	**4**	141	**3**	148	**15**	4	14	33	11	380	**19**	410	629
07:15 AM	7	5	34	46	4	165	1	170	15	**8**	**17**	**40**	5	**395**	15	**415**	**671**
07:30 AM	**9**	**16**	**46**	**71**	3	**169**	3	**175**	10	6	12	28	8	343	8	359	633
07:45 AM	6	9	43	58	2	163	2	167	8	7	6	21	**13**	360	14	387	633
Total Volume	26	34	153	213	13	638	9	660	48	25	49	122	37	1478	56	1571	2566
% App. Total	12.2	16	71.8		2	96.7	1.4		39.3	20.5	40.2		2.4	94.1	3.6		
PHF	.722	.531	.832	.750	.813	.944	.750	.943	.800	.781	.721	.763	.712	.935	.737	.946	.956

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	McNeil Street Southbound					Dillingham Boulevard Westbound					McNeil Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	6	13	21	9	49	5	257	8	13	283	29	8	7	4	48	15	217	28	13	273	653
03:15 PM	1	10	33	4	48	5	243	1	14	263	45	12	14	5	76	15	242	22	5	284	671
03:30 PM	3	10	32	4	49	10	250	6	23	289	37	9	6	3	55	14	297	24	11	346	739
03:45 PM	6	15	24	8	53	12	260	7	20	299	38	10	4	6	58	23	326	22	10	381	791
Total	16	48	110	25	199	32	1010	22	70	1134	149	39	31	18	237	67	1082	96	39	1284	2854
04:00 PM	5	8	39	0	52	6	237	6	27	276	32	12	10	2	56	23	284	30	5	342	726
04:15 PM	1	4	15	0	20	7	206	7	16	236	41	6	19	0	66	15	294	21	5	335	657
04:30 PM	3	9	23	3	38	3	258	1	23	285	45	15	6	7	73	15	272	16	8	311	707
04:45 PM	1	8	21	10	40	2	281	8	24	315	33	10	8	2	53	15	293	26	11	345	753
Total	10	29	98	13	150	18	982	22	90	1112	151	43	43	11	248	68	1143	93	29	1333	2843
05:00 PM	6	5	32	8	51	6	247	8	18	279	40	9	6	9	64	4	247	20	7	278	672
05:15 PM	3	3	20	8	34	2	244	4	13	263	37	7	9	3	56	22	266	24	5	317	670
05:30 PM	3	9	28	10	50	3	253	7	18	281	36	13	10	10	69	17	256	16	13	302	702
05:45 PM	3	4	26	6	39	9	207	11	20	247	32	12	7	2	53	22	223	21	7	273	612
Total	15	21	106	32	174	20	951	30	69	1070	145	41	32	24	242	65	992	81	32	1170	2656
Grand Total	41	98	314	70	523	70	2943	74	229	3316	445	123	106	53	727	200	3217	270	100	3787	8353
Apprch %	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		
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	

	McNeil Street Southbound					Dillingham Boulevard Westbound					McNeil Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
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																					
03:15 PM	1	10	33	4	48	5	243	1	14	263	**45**	**12**	**14**	5	**76**	15	242	22	5	284	671
03:30 PM	3	10	32	4	49	10	250	6	23	289	37	9	6	3	55	14	297	24	**11**	346	739
03:45 PM	**6**	**15**	24	**8**	**53**	**12**	**260**	**7**	20	**299**	38	10	4	**6**	58	**23**	**326**	22	10	**381**	**791**
04:00 PM	5	8	**39**	0	52	6	237	6	**27**	276	32	12	10	2	56	23	284	**30**	5	342	726
Total Volume	15	43	128	16	202	33	990	20	84	1127	152	43	34	16	245	75	1149	98	31	1353	2927
% 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		
PHF	.625	.717	.821	.500	.953	.688	.952	.714	.778	.942	.844	.896	.607	.667	.806	.815	.881	.817	.705	.888	.925

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Waiakamilo Road Southbound					Dillingham Boulevard Westbound					Waiakamilo Road Northbound					Dillingham Boulevard Eastbound					
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	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
Apprch %	12.4	60.4	20.1	7.1		10	80.6	9.1	0.3		10.3	71.7	17.4	0.6		13	80.5	6.1	0.3		
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	

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Waiakamilo Road Southbound					Dillingham Boulevard Westbound					Waiakamilo Road Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	29	101	30	14	174	21	219	34	0	274	7	95	33	4	139	31	163	19	12	225	812
03:15 PM	17	85	33	12	147	23	230	34	1	288	10	80	18	8	116	22	175	30	20	247	798
03:30 PM	23	105	49	16	193	28	242	55	0	325	9	97	22	2	130	24	189	21	18	252	900
03:45 PM	27	89	35	11	162	35	213	39	1	288	4	110	33	11	158	46	219	24	20	309	917
Total	96	380	147	53	676	107	904	162	2	1175	30	382	106	25	543	123	746	94	70	1033	3427
04:00 PM	24	111	36	20	191	25	200	35	0	260	4	122	33	3	162	30	190	14	12	246	859
04:15 PM	24	81	34	3	142	29	199	29	0	257	6	105	20	3	134	25	233	13	22	293	826
04:30 PM	21	73	24	23	141	25	246	51	0	322	7	129	20	10	166	20	203	18	17	258	887
04:45 PM	21	65	38	12	136	34	228	45	0	307	7	111	14	1	133	22	212	7	17	258	834
Total	90	330	132	58	610	113	873	160	0	1146	24	467	87	17	595	97	838	52	68	1055	3406
05:00 PM	22	65	35	28	150	17	244	34	0	295	3	115	21	1	140	18	173	11	12	214	799
05:15 PM	18	78	23	22	141	31	233	41	0	305	2	52	18	6	78	55	170	9	12	246	770
05:30 PM	26	68	37	19	150	22	214	44	0	280	10	85	21	2	118	25	167	11	9	212	760
05:45 PM	24	41	26	14	105	31	195	46	1	273	4	88	11	1	104	28	166	8	7	209	691
Total	90	252	121	83	546	101	886	165	1	1153	19	340	71	10	440	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	0	0	0
Grand Total	276	962	400	194	1832	321	2663	487	3	3474	73	1189	264	52	1578	346	2260	185	178	2969	9853
Apprch %	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		
Total %	2.8	9.8	4.1	2	18.6	3.3	27	4.9	0	35.3	0.7	12.1	2.7	0.5	16	3.5	22.9	1.9	1.8	30.1	

DRAFT

	Waiakamilo Road Southbound				Dillingham Boulevard Westbound				Waiakamilo Road Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	23	105	**49**	**177**	28	**242**	**55**	**325**	**9**	97	22	128	24	189	21	234	864
03:45 PM	**27**	89	35	151	**35**	213	39	287	4	110	**33**	147	**46**	219	**24**	**289**	**874**
04:00 PM	24	**111**	36	171	25	200	35	260	4	**122**	33	**159**	30	190	14	234	824
04:15 PM	24	81	34	139	29	199	29	257	6	105	20	131	25	**233**	13	271	798
Total Volume	98	386	154	638	117	854	158	1129	23	434	108	565	125	831	72	1028	3360
% App. Total	15.4	60.5	24.1		10.4	75.6	14		4.1	76.8	19.1		12.2	80.8	7		
PHF	.907	.869	.786	.901	.836	.882	.718	.868	.639	.889	.818	.888	.679	.892	.750	.889	.961

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kohou Street Southbound					Dillingham Boulevard Westbound					Kohou Street Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	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	

	Kohou Street Southbound				Dillingham Boulevard Westbound				Kohou Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 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		13.3	78.1	8.6		16.9	31.9	51.2		4.7	91.5	3.8		
PHF	.875	.836	.708	.953	.778	.941	.675	.928	.538	.697	.759	.741	.477	.896	.781	.923	.974

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kohou Street Southbound				Dillingham Boulevard Westbound				Kohou Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	28	33	17	78	30	196	24	250	16	22	36	74	16	240	13	269	671
03:15 PM	16	32	9	57	28	242	24	294	16	24	18	58	23	253	11	287	696
03:30 PM	22	22	29	73	23	241	30	294	19	32	47	98	7	256	9	272	737
03:45 PM	18	16	17	51	22	238	40	300	10	36	19	65	17	304	13	334	750
Total	84	103	72	259	103	917	118	1138	61	114	120	295	63	1053	46	1162	2854
04:00 PM	18	19	18	55	19	220	27	266	9	25	37	71	13	239	9	261	653
04:15 PM	15	22	23	60	21	244	15	280	10	21	32	63	14	289	8	311	714
04:30 PM	20	19	15	54	22	224	27	273	6	37	25	68	16	266	9	291	686
04:45 PM	13	13	8	34	15	292	20	327	11	29	19	59	20	273	10	303	723
Total	66	73	64	203	77	980	89	1146	36	112	113	261	63	1067	36	1166	2776
05:00 PM	16	26	15	57	23	232	24	279	11	30	11	52	21	250	12	283	671
05:15 PM	10	15	11	36	19	239	21	279	3	17	15	35	13	228	10	251	601
05:30 PM	21	13	11	45	12	208	16	236	15	19	8	42	10	211	7	228	551
05:45 PM	18	11	18	47	17	214	16	247	3	12	12	27	14	177	9	200	521
Total	65	65	55	185	71	893	77	1041	32	78	46	156	58	866	38	962	2344
Grand Total	215	241	191	647	251	2790	284	3325	129	304	279	712	184	2986	120	3290	7974
Apprch %	33.2	37.2	29.5		7.5	83.9	8.5		18.1	42.7	39.2		5.6	90.8	3.6		
Total %	2.7	3	2.4	8.1	3.1	35	3.6	41.7	1.6	3.8	3.5	8.9	2.3	37.4	1.5	41.3	

	Kohou Street Southbound				Dillingham Boulevard Westbound				Kohou Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:00 PM	**28**	**33**	17	**78**	**30**	196	24	250	16	22	36	74	16	240	**13**	269	671
03:15 PM	16	32	9	57	28	**242**	24	294	16	24	18	58	**23**	253	11	287	696
03:30 PM	22	22	**29**	73	23	241	30	294	**19**	32	**47**	**98**	7	256	9	272	737
03:45 PM	18	16	17	51	22	238	**40**	**300**	10	**36**	19	65	17	**304**	13	**334**	**750**
Total Volume	84	103	72	259	103	917	118	1138	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		5.4	90.6	4		
PHF	.750	.780	.621	.830	.858	.947	.738	.948	.803	.792	.638	.753	.685	.866	.885	.870	.951

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kokea Street Southbound					Dillingham Boulevard Westbound					Kokea Street Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	57.9	13	13.7	15.4		2.4	78.2	14.6	4.8		33.3	9	13.2	44.4		11.9	85.4	2.6	0		
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	

	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:30 AM																	
07:30 AM	24	0	5	29	**5**	147	22	174	4	4	1	9	29	**325**	4	**358**	570
07:45 AM	34	3	4	41	0	155	35	190	**9**	0	**2**	11	39	267	**9**	315	557
08:00 AM	27	**8**	9	44	3	161	36	200	7	**5**	2	**14**	56	260	6	322	580
08:15 AM	**35**	4	**19**	**58**	2	**162**	**37**	**201**	3	0	1	4	**59**	262	7	328	**591**
Total Volume	120	15	37	172	10	625	130	765	23	9	6	38	183	1114	26	1323	2298
% App. Total	69.8	8.7	21.5		1.3	81.7	17		60.5	23.7	15.8		13.8	84.2	2		
PHF	.857	.469	.487	.741	.500	.965	.878	.951	.639	.450	.750	.679	.775	.857	.722	.924	.972

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Kokea Street Southbound					Dillingham Boulevard Westbound					Kokea Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	34	1	21	16	72	2	238	36	5	281	7	11	3	5	26	20	276	3	0	299	678
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	8	326	10	10	3	4	27	41	291	7	0	339	732
04:45 PM	29	3	14	5	51	2	299	36	9	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
Apprch %	52.3	5.4	28.5	13.7		1	83.7	12.6	2.7		35.9	30.2	13	21		10.5	87.6	1.8	0.1		
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	

	Kokea Street Southbound				Dillingham Boulevard Westbound				Kokea Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:30 PM	35	0	16	51	2	**285**	**44**	**331**	4	7	3	14	42	**299**	**8**	**349**	**745**
03:45 PM	35	**6**	**32**	**73**	4	251	38	293	7	**9**	**7**	**23**	**52**	276	8	336	725
04:00 PM	**37**	1	16	54	**5**	268	43	316	**12**	8	3	23	36	295	5	336	729
04:15 PM	25	4	22	51	3	260	38	301	5	4	6	15	46	275	3	324	691
Total Volume	132	11	86	229	14	1064	163	1241	28	28	19	75	176	1145	24	1345	2890
% App. Total	57.6	4.8	37.6		1.1	85.7	13.1		37.3	37.3	25.3		13.1	85.1	1.8		
PHF	.892	.458	.672	.784	.700	.933	.926	.937	.583	.778	.679	.815	.846	.957	.750	.963	.970

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Honolulu Community College Driveway Southbound					Dillingham Boulevard Westbound					Alakawa Street Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
06:00 AM	0	0	0	0	0	34	41	0	12	87	32	0	20	8	60	0	74	47	0	121	268
06:15 AM	0	0	0	0	0	48	73	1	7	129	29	0	34	5	68	0	113	84	0	197	394
06:30 AM	1	0	0	0	1	47	82	1	10	140	33	0	29	15	77	1	152	76	0	229	447
06:45 AM	0	0	1	0	1	42	95	1	11	149	47	0	42	5	94	3	209	89	0	301	545
Total	1	0	1	0	2	171	291	3	40	505	141	0	125	33	299	4	548	296	0	848	1654
07:00 AM	0	0	0	0	0	40	109	0	14	163	44	0	44	3	91	1	235	84	0	320	574
07:15 AM	0	0	0	0	0	41	112	8	16	177	51	0	54	6	111	8	280	101	0	389	677
07:30 AM	0	0	1	0	1	51	118	2	9	180	54	0	30	3	87	1	243	102	0	346	614
07:45 AM	0	0	1	0	1	72	128	3	3	206	60	0	31	6	97	5	226	105	0	336	640
Total	0	0	2	0	2	204	467	13	42	726	209	0	159	18	386	15	984	392	0	1391	2505
08:00 AM	0	0	0	0	0	66	153	0	2	221	59	0	48	6	113	5	197	103	0	305	639
08:15 AM	0	0	0	0	0	80	155	3	8	246	58	0	52	6	116	2	192	106	0	300	662
08:30 AM	0	0	0	0	0	72	116	2	3	193	63	0	58	3	124	6	185	85	0	276	593
08:45 AM	0	0	0	0	0	77	116	5	10	208	69	0	55	7	131	4	136	96	1	237	576
Total	0	0	0	0	0	295	540	10	23	868	249	0	213	22	484	17	710	390	1	1118	2470
Grand Total	1	0	3	0	4	670	1298	26	105	2099	599	0	497	73	1169	36	2242	1078	1	3357	6629
Apprch %	25	0	75	0		31.9	61.8	1.2	5		51.2	0	42.5	6.2		1.1	66.8	32.1	0		
Total %	0	0	0	0	0.1	10.1	19.6	0.4	1.6	31.7	9	0	7.5	1.1	17.6	0.5	33.8	16.3	0	50.6	

	Honolulu Community College Driveway Southbound				Dillingham Boulevard Westbound				Alakawa Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	0	0	0	0	41	112	**8**	161	51	0	**54**	105	**8**	**280**	101	**389**	**655**
07:30 AM	0	0	**1**	**1**	51	118	2	171	54	0	30	84	1	243	102	346	602
07:45 AM	0	0	1	1	**72**	128	3	203	**60**	0	31	91	5	226	**105**	336	631
08:00 AM	0	0	0	0	66	**153**	0	**219**	59	0	48	**107**	5	197	103	305	631
Total Volume	0	0	2	2	230	511	13	754	224	0	163	387	19	946	411	1376	2519
% App. Total	0	0	100		30.5	67.8	1.7		57.9	0	42.1		1.4	68.8	29.9		
PHF	.000	.000	.500	.500	.799	.835	.406	.861	.933	.000	.755	.904	.594	.845	.979	.884	.961

DRAFT

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

	Honolulu Community College Driveway Southbound					Dillingham Boulevard Westbound					Alakawa Street Northbound					Dillingham Boulevard Eastbound					
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	Int. 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
Apprch %	33.3	0	66.7	0		22.2	72	1.2	4.6		58.7	0.8	37.2	3.4		0.9	70.1	28.5	0.5		
Total %	0	0	0	0	0	7.3	23.6	0.4	1.5	32.8	16	0.2	10.1	0.9	27.2	0.3	28	11.4	0.2	39.9	

	Honolulu Community College Driveway Southbound				Dillingham Boulevard Westbound				Alakawa Street Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. 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	0	0	0	0	**57**	192	4	253	**138**	**4**	**86**	**228**	5	211	86	302	783
04:00 PM	0	0	0	0	53	**207**	**14**	**274**	116	1	85	202	**6**	227	**104**	337	**813**
04:15 PM	0	0	**1**	**1**	55	173	2	230	125	1	73	199	2	225	91	318	748
04:30 PM	0	0	0	0	45	197	2	244	118	0	69	187	5	**261**	99	**365**	796
Total Volume	0	0	1	1	210	769	22	1001	497	6	313	816	18	924	380	1322	3140
% App. Total	0	0	100		21	76.8	2.2		60.9	0.7	38.4		1.4	69.9	28.7		
PHF	.000	.000	.250	.250	.921	.929	.393	.913	.900	.375	.910	.895	.750	.885	.913	.905	.966

DRAFT

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

	Honolulu Community College Driveway Southbound					Dillingham Boulevard Westbound					Costco Driveway Northbound					Dillingham Boulevard Eastbound					
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	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	0	5	116	3	1	125	2	0	4	0	6	1	141	4	0	146	277
06:30 AM	0	0	1	0	1	2	132	3	5	142	1	0	5	3	9	0	194	3	0	197	349
06:45 AM	1	0	0	0	1	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	2	15	158	10	10	193	3	0	8	2	13	0	314	3	0	317	525
07:30 AM	0	0	0	0	0	11	172	9	7	199	4	0	6	7	17	0	281	14	0	295	511
07:45 AM	1	0	1	0	2	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	1	10	213	13	3	239	2	0	6	1	9	0	253	7	0	260	509
08:15 AM	1	0	2	0	3	18	227	12	8	265	2	0	7	5	14	0	212	7	0	219	501
08:30 AM	0	0	1	0	1	29	178	4	6	217	1	0	7	3	11	0	246	7	0	253	482
08:45 AM	0	0	2	0	2	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		6.5	88	3	2.4		22.1	0	53.8	24		0	97	3	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	

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

DRAFT

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

	Honolulu Community College Driveway Southbound					Dillingham Boulevard Westbound					COSTCO Driveway Northbound					Dillingham Boulevard Eastbound					
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	Int. Total
03:00 PM	0	0	10	0	10	72	180	4	4	260	24	0	73	6	103	0	273	34	0	307	680
03:15 PM	1	0	21	0	22	61	210	7	4	282	26	0	58	7	91	0	292	24	0	316	711
03:30 PM	0	0	17	0	17	58	246	3	10	317	16	0	93	6	115	35	227	22	0	284	733
03:45 PM	0	0	8	0	8	64	210	4	8	286	19	0	78	4	101	0	279	20	0	299	694
Total	1	0	56	0	57	255	846	18	26	1145	85	0	302	23	410	35	1071	100	0	1206	2818
04:00 PM	0	0	3	0	3	51	251	1	8	311	14	0	59	7	80	0	273	34	0	307	701
04:15 PM	1	0	2	0	3	51	201	3	11	266	12	0	63	5	80	0	312	25	0	337	686
04:30 PM	0	0	4	0	4	57	213	2	11	283	19	0	74	5	98	0	268	21	0	289	674
04:45 PM	0	0	5	0	5	47	209	2	6	264	19	0	58	2	79	0	258	24	0	282	630
Total	1	0	14	0	15	206	874	8	36	1124	64	0	254	19	337	0	1111	104	0	1215	2691
05:00 PM	0	0	0	0	0	59	218	0	14	291	11	0	69	1	81	0	251	16	0	267	639
05:15 PM	0	0	1	0	1	64	206	1	11	282	17	0	41	6	64	0	284	46	3	333	680
05:30 PM	1	0	1	0	2	51	194	1	4	250	12	0	70	10	92	0	280	29	0	309	653
05:45 PM	0	0	3	0	3	58	188	2	10	258	9	0	89	2	100	0	231	13	0	244	605
Total	1	0	5	0	6	232	806	4	39	1081	49	0	269	19	337	0	1046	104	3	1153	2577
Grand Total	3	0	75	0	78	693	2526	30	101	3350	198	0	825	61	1084	35	3228	308	3	3574	8086
Apprch %	3.8	0	96.2	0		20.7	75.4	0.9	3		18.3	0	76.1	5.6		1	90.3	8.6	0.1		
Total %	0	0	0.9	0	1	8.6	31.2	0.4	1.2	41.4	2.4	0	10.2	0.8	13.4	0.4	39.9	3.8	0	44.2	

	Honolulu Community College Driveway Southbound				Dillingham Boulevard Westbound				COSTCO Driveway Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:15 PM	**1**	0	**21**	**22**	61	210	**7**	278	**26**	0	58	84	0	**292**	24	**316**	700
03:30 PM	0	0	17	17	58	246	3	**307**	16	0	**93**	**109**	**35**	227	22	284	**717**
03:45 PM	0	0	8	8	**64**	210	4	278	19	0	78	97	0	279	20	299	682
04:00 PM	0	0	3	3	51	**251**	1	303	14	0	59	73	0	273	**34**	307	686
Total Volume	1	0	49	50	234	917	15	1166	75	0	288	363	35	1071	100	1206	2785
% App. Total	2	0	98		20.1	78.6	1.3		20.7	0	79.3		2.9	88.8	8.3		
PHF	.250	.000	.583	.568	.914	.913	.536	.950	.721	.000	.774	.833	.250	.917	.735	.954	.971

DRAFT

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

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

	Akepo Lane Southbound				Westbound	Costco Parking Lot Northbound				Dillingham Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	27	0	0	0	3	3	0	0	0	0	30
08:00 AM	2	0	**29**	**31**	0	0	0	3	3	0	0	0	0	**34**
08:15 AM	3	0	20	23	0	0	0	3	3	0	0	**2**	**2**	28
08:30 AM	**4**	0	16	20	0	0	0	**5**	**5**	0	0	0	0	25
Total Volume	10	0	91	101	0	0	0	14	14	0	0	2	2	117
% App. Total	9.9	0	90.1			0	0	100		0	0	100		
PHF	.625	.000	.784	.815	.000	.000	.000	.700	.700	.000	.000	.250	.250	.860

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

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

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

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

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

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

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

Groups Printed- Unshifted

	Southbound	Dillingham Boulevard Westbound					Kaaahi Street Northbound					Dillingham Boulevard Eastbound					
Start Time	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	11	184	0	9	204	12	0	8	7	27	0	323	11	0	334	565
03:15 PM	0	10	228	0	4	242	8	0	14	8	30	0	304	11	0	315	587
03:30 PM	0	5	258	0	2	265	14	0	17	10	41	0	339	11	0	350	656
03:45 PM	0	7	206	0	3	216	7	0	6	12	25	0	291	4	0	295	536
Total	0	33	876	0	18	927	41	0	45	37	123	0	1257	37	0	1294	2344
04:00 PM	0	8	238	0	7	253	9	0	20	18	47	0	310	3	0	313	613
04:15 PM	0	12	235	0	7	254	13	0	11	12	36	0	294	5	0	299	589
04:30 PM	0	14	249	0	10	273	15	0	13	17	45	0	308	7	0	315	633
04:45 PM	0	7	241	0	4	252	8	0	12	7	27	0	325	12	0	337	616
Total	0	41	963	0	28	1032	45	0	56	54	155	0	1237	27	0	1264	2451
05:00 PM	0	5	233	0	2	240	13	0	10	10	33	0	314	2	0	316	589
05:15 PM	0	3	269	0	10	282	4	0	9	15	28	0	326	4	0	330	640
05:30 PM	0	4	221	0	8	233	10	0	6	11	27	0	299	6	0	305	565
05:45 PM	0	3	193	0	4	200	8	0	9	8	25	0	266	6	0	272	497
Total	0	15	916	0	24	955	35	0	34	44	113	0	1205	18	0	1223	2291
Grand Total	0	89	2755	0	70	2914	121	0	135	135	391	0	3699	82	0	3781	7086
Apprch %		3.1	94.5	0	2.4		30.9	0	34.5	34.5		0	97.8	2.2	0		
Total %	0	1.3	38.9	0	1	41.1	1.7	0	1.9	1.9	5.5	0	52.2	1.2	0	53.4	

	Southbound	Dillingham Boulevard Westbound				Kaaahi Street Northbound				Dillingham Boulevard Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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														
04:30 PM	0	**14**	249	0	263	**15**	0	**13**	**28**	0	308	7	315	606
04:45 PM	0	7	241	0	248	8	0	12	20	0	325	**12**	**337**	605
05:00 PM	0	5	233	0	238	13	0	10	23	0	314	2	316	577
05:15 PM	0	3	**269**	0	**272**	4	0	9	13	0	**326**	4	330	**615**
Total Volume	0	29	992	0	1021	40	0	44	84	0	1273	25	1298	2403
% App. Total		2.8	97.2	0		47.6	0	52.4		0	98.1	1.9		
PHF	.000	.518	.922	.000	.938	.667	.000	.846	.750	.000	.976	.521	.963	.977

DRAFT

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 : KingDilLil AM
Site Code : 00000004
Start Date : 10/17/2013
Page No : 1

Groups Printed- Unshifted

	Liliha Street Southbound					N. King Street Westbound					Dillingham Boulevard Northbound					N. King Street Eastbound					
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	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
Total	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
Total	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
Total	262	357	12	22	653	559	717	149	0	1425	0	432	780	83	1295	0	690	40	160	890	4263
Grand Total	731	931	50	77	1789	1397	1754	361	0	3512	0	1064	2258	236	3558	0	2113	70	524	2707	11566
Apprch %	40.9	52	2.8	4.3		39.8	49.9	10.3	0		0	29.9	63.5	6.6		0	78.1	2.6	19.4		
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	23.4	

	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 07:15 AM																	
07:15 AM	72	79	0	151	145	**216**	29	390	0	97	267	364	0	213	6	219	1124
07:30 AM	**98**	95	7	**200**	146	199	39	384	0	**120**	**284**	**404**	0	213	3	216	**1204**
07:45 AM	86	**103**	**8**	197	**163**	170	32	365	0	89	223	312	0	**227**	**9**	**236**	1110
08:00 AM	98	81	3	182	158	189	**46**	**393**	0	97	219	316	0	208	5	213	1104
Total Volume	354	358	18	730	612	774	146	1532	0	403	993	1396	0	861	23	884	4542
% App. Total	48.5	49	2.5		39.9	50.5	9.5		0	28.9	71.1		0	97.4	2.6		
PHF	.903	.869	.563	.913	.939	.896	.793	.975	.000	.840	.874	.864	.000	.948	.639	.936	.943

DRAFT

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 : KingDilLil PM
Site Code : 00000004
Start Date : 10/17/2013
Page No : 1

Groups Printed- Unshifted

	Liliha Street Southbound					N. King Street Westbound					Dillingham Boulevard Northbound					N. King Street Eastbound					
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	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	945
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
Total	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
Total	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
Total	192	286	32	28	538	933	1567	188	0	2688	0	718	881	70	1669	0	598	23	115	736	5631
Grand Total	495	873	93	63	1524	2324	3872	490	0	6686	0	2009	2411	242	4662	4	1843	75	391	2313	15185
Apprch %	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	

	Liliha Street Southbound				N. King Street Westbound				Dillingham Boulevard Northbound				N. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**47**	69	4	120	203	388	39	630	0	176	220	396	0	**174**	**10**	**184**	1330
05:00 PM	47	76	7	130	228	386	**65**	679	0	181	**251**	**432**	0	172	7	179	1420
05:15 PM	43	**87**	**10**	**140**	**247**	**436**	37	**720**	0	186	220	406	0	149	7	156	**1422**
05:30 PM	36	56	4	96	213	423	47	683	0	**201**	226	427	0	141	7	148	1354
Total Volume	173	288	25	486	891	1633	188	2712	0	744	917	1661	0	636	31	667	5526
% App. Total	35.6	59.3	5.1		32.9	60.2	6.9		0	44.8	55.2		0	95.4	4.6		
PHF	.920	.828	.625	.868	.902	.936	.723	.942	.000	.925	.913	.961	.000	.914	.775	.906	.972

DRAFT

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

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

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

DRAFT

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

	Kalihi Street Southbound					Westbound	Kalihi Street Northbound					Beckley Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	68	7	0	75	0	14	266	2	9	291	87	0	8	0	95	461
03:15 PM	0	69	7	0	76	0	26	238	0	22	286	79	0	13	0	92	454
03:30 PM	0	89	4	0	93	0	27	286	0	9	322	85	0	11	0	96	511
03:45 PM	0	86	4	0	90	0	37	325	0	9	371	99	0	8	0	107	568
Total	0	312	22	0	334	0	104	1115	2	49	1270	350	0	40	0	390	1994
04:00 PM	0	72	4	0	76	0	29	272	0	6	307	85	0	12	0	97	480
04:15 PM	0	72	3	0	75	0	26	306	0	10	342	102	0	10	0	112	529
04:30 PM	0	74	9	0	83	0	32	289	0	5	326	94	0	10	0	104	513
04:45 PM	0	65	5	0	70	0	25	340	0	26	391	81	0	8	0	89	550
Total	0	283	21	0	304	0	112	1207	0	47	1366	362	0	40	0	402	2072
05:00 PM	0	71	9	0	80	0	35	291	0	5	331	72	0	22	0	94	505
05:15 PM	0	105	5	0	110	0	30	318	0	17	365	63	0	23	0	86	561
05:30 PM	0	88	6	0	94	0	22	280	0	8	310	49	0	10	0	59	463
05:45 PM	0	85	5	0	90	0	23	279	0	13	315	56	0	10	0	66	471
Total	0	349	25	0	374	0	110	1168	0	43	1321	240	0	65	0	305	2000
Grand Total	0	944	68	0	1012	0	326	3490	2	139	3957	952	0	145	0	1097	6066
Apprch %	0	93.3	6.7	0			8.2	88.2	0.1	3.5		86.8	0	13.2	0		
Total %	0	15.6	1.1	0	16.7	0	5.4	57.5	0	2.3	65.2	15.7	0	2.4	0	18.1	

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

DRAFT

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

	Kalihi Street Southbound					S. King Street Westbound					Kalihi Street Northbound					S. King Street Eastbound					
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	Int. Total
06:00 AM	25	59	7	1	92	21	58	16	3	98	4	36	6	2	48	49	108	4	0	161	399
06:15 AM	28	71	3	16	118	22	62	15	18	117	2	74	6	2	84	46	229	6	1	282	601
06:30 AM	20	65	5	14	104	23	67	15	21	126	5	86	10	2	103	49	280	4	2	335	668
06:45 AM	25	42	3	8	78	19	96	21	11	147	2	81	15	3	101	48	268	6	0	322	648
Total	98	237	18	39	392	85	283	67	53	488	13	277	37	9	336	192	885	20	3	1100	2316
07:00 AM	35	59	0	24	118	35	98	20	35	188	3	82	15	17	117	46	277	7	23	353	776
07:15 AM	35	65	5	66	171	31	114	31	66	242	3	74	11	9	97	41	250	8	18	317	827
07:30 AM	47	87	5	85	224	42	95	36	167	340	4	67	23	69	163	36	216	8	16	276	1003
07:45 AM	47	118	16	194	375	42	116	44	211	413	6	74	12	8	100	47	275	8	12	342	1230
Total	164	329	26	369	888	150	423	131	479	1183	16	297	61	103	477	170	1018	31	69	1288	3836
08:00 AM	49	67	7	36	159	39	121	23	43	226	5	75	15	2	97	54	240	10	4	308	790
08:15 AM	34	75	11	19	139	25	110	32	23	190	6	98	19	7	130	67	261	10	6	344	803
08:30 AM	50	89	5	6	150	19	92	37	14	162	8	116	26	6	156	50	216	4	4	274	742
08:45 AM	31	50	7	3	91	27	121	25	5	178	3	79	14	2	98	61	211	11	1	284	651
Total	164	281	30	64	539	110	444	117	85	756	22	368	74	17	481	232	928	35	15	1210	2986
Grand Total	426	847	74	472	1819	345	1150	315	617	2427	51	942	172	129	1294	594	2831	86	87	3598	9138
Apprch %	23.4	46.6	4.1	25.9		14.2	47.4	13	25.4		3.9	72.8	13.3	10		16.5	78.7	2.4	2.4		
Total %	4.7	9.3	0.8	5.2	19.9	3.8	12.6	3.4	6.8	26.6	0.6	10.3	1.9	1.4	14.2	6.5	31	0.9	1	39.4	

	Kalihi Street Southbound				S. King Street Westbound				Kalihi Street Northbound				S. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	47	**118**	**16**	**181**	**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		17.9	62.7	19.4		5.4	78.9	15.7		17.6	79.9	2.6		
PHF	.900	.739	.609	.785	.744	.907	.773	.866	.781	.782	.692	.767	.813	.902	.800	.919	.922

DRAFT

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

	Kalihi Street (Road Closure Until 3:30PM) Southbound					S. King Street Westbound					Kalihi Street Northbound					S. King Street Eastbound					
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	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
Total	43	227	35	31	336	131	514	354	42	1041	33	668	53	54	808	231	701	36	17	985	3170
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
Total	115	169	28	26	338	140	627	294	104	1165	29	733	45	45	852	266	706	18	27	1017	3372
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
Total	142	181	33	33	389	116	704	294	86	1200	42	730	35	39	846	247	630	17	33	927	3362
Grand Total	300	577	96	90	1063	387	1845	942	232	3406	104	2131	133	138	2506	744	2037	71	77	2929	9904
Apprch %	28.2	54.3	9	8.5		11.4	54.2	27.7	6.8		4.2	85	5.3	5.5		25.4	69.5	2.4	2.6		
Total %	3	5.8	1	0.9	10.7	3.9	18.6	9.5	2.3	34.4	1.1	21.5	1.3	1.4	25.3	7.5	20.6	0.7	0.8	29.6	

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

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

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

Groups Printed- Unshifted

	Kalihi Street Southbound					Kaumualii Street Westbound					Kalihi Street Northbound					Kaumualii Street Eastbound					
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	Int. Total
06:00 AM	1	90	2	0	93	0	1	0	10	11	0	37	0	2	39	3	0	4	7	14	157
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
Total	14	350	10	5	379	4	1	5	36	46	2	270	4	10	286	13	3	13	14	43	754
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
Total	49	416	9	122	596	6	11	16	267	300	3	282	31	135	451	20	41	6	65	132	1479
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
Total	21	383	14	32	450	17	9	38	38	102	1	365	12	45	423	8	5	10	15	38	1013
Grand Total	84	1149	33	159	1425	27	21	59	341	448	6	917	47	190	1160	41	49	29	94	213	3246
Apprch %	5.9	80.6	2.3	11.2		6	4.7	13.2	76.1		0.5	79.1	4.1	16.4		19.2	23	13.6	44.1		
Total %	2.6	35.4	1	4.9	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	

	Kalihi Street Southbound				Kaumualii Street Westbound				Kalihi Street Northbound				Kaumualii Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	**15**	**142**	4	**161**	1	**8**	13	22	**2**	67	**11**	80	2	**18**	**3**	**23**	**286**
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		20.7	19.5	59.8		0.6	93.5	5.9		22	53.7	24.4		
PHF	.583	.755	.464	.741	.472	.500	.613	.603	.250	.798	.477	.845	.563	.306	.833	.446	.835

DRAFT

Wilson Okamoto Corporation

1907 S. Beretania Street
Honolulu, Hi 96826

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

File Name : KalKau PM
Site Code : 00000002
Start Date : 10/15/2013
Page No : 1

Groups Printed- Unshifted

	Kalihi Street Southbound					Kaumualii Street Westbound					Kalihi Street Northbound					Kaumualii Street Eastbound					
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	Int. Total
03:00 PM	4	105	5	23	137	2	3	5	0	10	9	173	7	5	194	3	4	3	0	10	351
03:15 PM	5	100	2	18	125	10	5	5	0	20	11	166	2	2	181	4	1	0	14	19	345
03:30 PM	3	103	6	17	129	6	3	4	0	13	7	192	6	9	214	2	3	1	6	12	368
03:45 PM	2	65	3	10	80	6	1	6	0	13	9	183	4	4	200	2	3	4	4	13	306
Total	14	373	16	68	471	24	12	20	0	56	36	714	19	20	789	11	11	8	24	54	1370
04:00 PM	3	81	5	17	106	3	5	2	0	10	5	203	4	7	219	5	4	5	2	16	351
04:15 PM	4	92	4	15	115	5	3	3	0	11	4	195	4	12	215	1	1	5	2	9	350
04:30 PM	4	64	0	29	97	2	1	4	0	7	5	190	6	3	204	11	0	1	13	25	333
04:45 PM	3	72	3	12	90	1	2	0	0	3	4	225	3	8	240	4	2	3	13	22	355
Total	14	309	12	73	408	11	11	9	0	31	18	813	17	30	878	21	7	14	30	72	1389
05:00 PM	0	64	7	25	96	3	2	6	0	11	2	197	2	2	203	4	0	1	10	15	325
05:15 PM	6	70	9	14	99	1	2	3	0	6	5	233	4	8	250	4	1	2	10	17	372
05:30 PM	3	46	0	13	62	4	2	9	0	15	3	180	3	4	190	0	2	0	2	4	271
05:45 PM	3	68	4	14	89	0	0	2	0	2	3	176	0	12	191	3	0	0	1	4	286
Total	12	248	20	66	346	8	6	20	0	34	13	786	9	26	834	11	3	3	23	40	1254
Grand Total	40	930	48	207	1225	43	29	49	0	121	67	2313	45	76	2501	43	21	25	77	166	4013
Apprch %	3.3	75.9	3.9	16.9		35.5	24	40.5	0		2.7	92.5	1.8	3		25.9	12.7	15.1	46.4		
Total %	1	23.2	1.2	5.2	30.5	1.1	0.7	1.2	0	3	1.7	57.6	1.1	1.9	62.3	1.1	0.5	0.6	1.9	4.1	

	Kalihi Street Southbound				Kaumualii Street Westbound				Kalihi Street Northbound				Kaumualii Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:30 PM	3	**103**	**6**	**112**	**6**	3	4	**13**	7	192	**6**	205	2	3	1	6	**336**
03:45 PM	2	65	3	70	6	1	**6**	13	**9**	183	4	196	2	3	4	9	288
04:00 PM	3	81	5	89	3	**5**	2	10	5	**203**	4	**212**	**5**	**4**	**5**	**14**	325
04:15 PM	**4**	92	4	100	5	3	3	11	4	195	4	203	1	1	5	7	321
Total Volume	12	341	18	371	20	12	15	47	25	773	18	816	10	11	15	36	1270
% App. Total	3.2	91.9	4.9		42.6	25.5	31.9		3.1	94.7	2.2		27.8	30.6	41.7		
PHF	.750	.828	.750	.828	.833	.600	.625	.904	.694	.952	.750	.962	.500	.688	.750	.643	.945

DRAFT

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

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

	Kalihi Street Southbound				Nimitz Highway Westbound				Kalihi Street Northbound				Nimitz Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 06:45 AM																	
06:45 AM	**45**	89	8	142	0	323	13	336	5	25	**28**	58	13	956	7	976	1512
07:00 AM	42	75	8	125	0	362	16	378	11	**40**	26	**77**	10	1033	3	1046	1626
07:15 AM	29	71	4	104	0	**406**	11	**417**	11	20	24	55	12	**1061**	2	**1075**	**1651**
07:30 AM	45	**94**	**19**	**158**	0	371	**22**	393	**13**	37	21	71	**16**	929	**10**	955	1577
Total Volume	161	329	39	529	0	1462	62	1524	40	122	99	261	51	3979	22	4052	6366
% App. Total	30.4	62.2	7.4		0	95.9	4.1		15.3	46.7	37.9		1.3	98.2	0.5		
PHF	.894	.875	.513	.837	.000	.900	.705	.914	.769	.763	.884	.847	.797	.938	.550	.942	.964

DRAFT

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

	Kalihi Street Southbound					Nimitz Highway Westbound					Kalihi Street Northbound					Nimitz Highway Eastbound					
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	Int. Total
03:00 PM	39	48	34	2	123	32	557	27	14	630	22	56	19	4	101	23	540	10	5	578	1432
03:15 PM	38	42	32	0	112	34	601	39	8	682	22	55	22	3	102	26	622	6	2	656	1552
03:30 PM	39	60	33	2	134	27	665	24	1	717	22	49	32	2	105	18	656	1	3	678	1634
03:45 PM	27	39	21	1	88	26	648	33	6	713	26	51	23	1	101	30	612	8	5	655	1557
Total	143	189	120	5	457	119	2471	123	29	2742	92	211	96	10	409	97	2430	25	15	2567	6175
04:00 PM	20	43	27	4	94	24	658	25	2	709	14	53	27	1	95	23	668	2	6	699	1597
04:15 PM	26	33	21	0	80	28	679	26	4	737	6	53	31	1	91	23	680	1	5	709	1617
04:30 PM	29	28	23	4	84	15	653	29	2	699	13	61	11	2	87	21	684	2	5	712	1582
04:45 PM	31	38	20	1	90	17	671	32	0	720	13	50	17	1	81	21	673	5	4	703	1594
Total	106	142	91	9	348	84	2661	112	8	2865	46	217	86	5	354	88	2705	10	20	2823	6390
05:00 PM	30	43	25	0	98	14	673	26	1	714	13	55	21	0	89	25	558	3	8	594	1495
05:15 PM	32	36	18	8	94	18	702	23	12	755	4	31	22	1	58	19	599	2	6	626	1533
05:30 PM	28	33	14	3	78	19	671	24	2	716	7	42	17	1	67	22	549	2	1	574	1435
05:45 PM	30	31	21	0	82	21	682	19	10	732	5	38	11	0	54	16	465	7	8	496	1364
Total	120	143	78	11	352	72	2728	92	25	2917	29	166	71	2	268	82	2171	14	23	2290	5827
Grand Total	369	474	289	25	1157	275	7860	327	62	8524	167	594	253	17	1031	267	7306	49	58	7680	18392
Apprch %	31.9	41	25	2.2		3.2	92.2	3.8	0.7		16.2	57.6	24.5	1.6		3.5	95.1	0.6	0.8		
Total %	2	2.6	1.6	0.1	6.3	1.5	42.7	1.8	0.3	46.3	0.9	3.2	1.4	0.1	5.6	1.5	39.7	0.3	0.3	41.8	

	Kalihi Street Southbound				Nimitz Highway Westbound				Kalihi Street Northbound				Nimitz Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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																	
03:30 PM	**39**	**60**	**33**	**132**	27	665	24	716	22	49	**32**	**103**	18	656	1	675	**1626**
03:45 PM	27	39	21	87	26	648	**33**	707	**26**	51	23	100	**30**	612	**8**	650	1544
04:00 PM	20	43	27	90	24	658	25	707	14	**53**	27	94	23	668	2	693	1584
04:15 PM	26	33	21	80	**28**	**679**	26	**733**	6	53	31	90	23	**680**	1	**704**	1607
Total Volume	112	175	102	389	105	2650	108	2863	68	206	113	387	94	2616	12	2722	6361
% App. Total	28.8	45	26.2		3.7	92.6	3.8		17.6	53.2	29.2		3.5	96.1	0.4		
PHF	.718	.729	.773	.737	.938	.976	.818	.976	.654	.972	.883	.939	.783	.962	.375	.967	.978

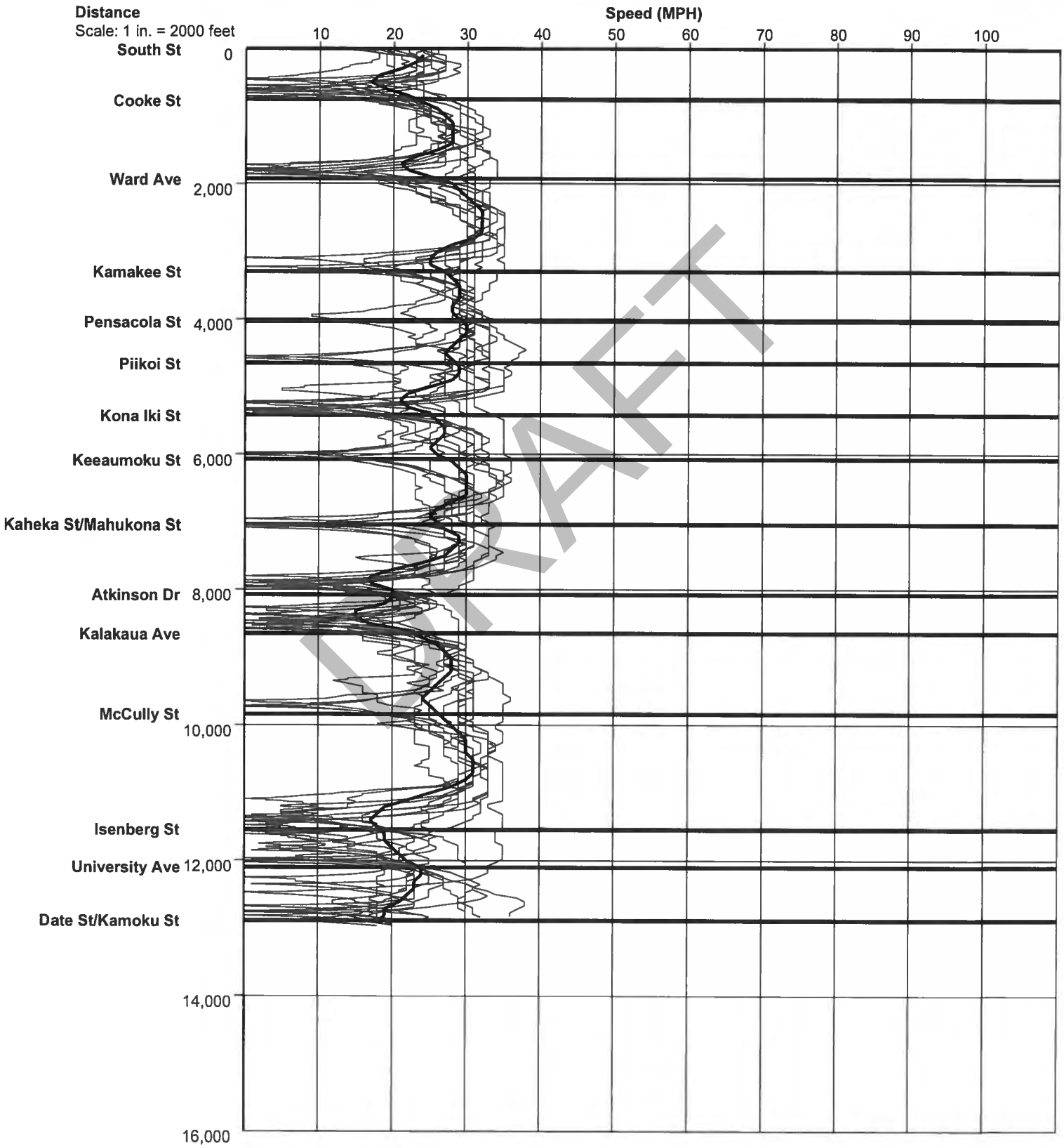
DRAFT

Wilson Okamoto Corporation

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

Study Name : **Kapiolani EB AM**
Study Date : **10/17/2013**

Speed/Distance Profiles of All Runs



Contraflow - Kapiolani Boulevard Eastbound 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
Travel Time														
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	18	54	47	52	24	34	39
8	653	Keeaumoku 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	53	39	54	41
12	1194	McCully Street	29	78	28	29	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	Date/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
Number of Stops														
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	1
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	Keeaumoku Street	1	0	0	0	0	0	0	0	0	0	1	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	Date/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

DRAFT

Contraflow - Kapiolani Boulevard Eastbound AM

Average Speed														
1	0	South Street												
2	750	Cooke Street	20.5	23.5	23.3	15.3	9.1	6.4	8.3	9.5	8.5	6.1	8.2	25.4
3	1171	Ward Avenue	26.2	9.2	13.7	30.2	27.5	23.6	29.3	6.6	6.7	14.3	6.9	26.4
4	1374	Kamakee Street	30.5	27.5	31.9	29.1	26.6	28.5	28.9	17.3	18	28.4	27	14.6
5	735	Pensacola Street	19.2	29.8	32	29.2	26.8	30.8	25.9	29.1	27.4	29.8	25.5	28.1
6	620	Piikoi Street	23	30.8	9.6	29.1	30.4	30.5	28.9	32.8	33	9.2	22.5	35.7
7	766	Kona Iki Street	27.9	18.5	29.8	11.7	12.2	27.9	9.4	10.7	10.2	21.8	15.1	13.6
8	653	Keeaumoku Street	7.7	18	35.2	29.6	30.5	22.6	23.8	25.3	28.9	27.8	6.2	28.9
9	961	Kaheka Street/Mahukona Street	23	26.2	10.2	33.4	31.5	28.4	23	24.2	31.1	26.6	25.9	31
10	1038	Atkinson Drive	6.7	6.7	10.8	19.8	6	20.9	7.8	11.3	24.1	11.4	13.1	14.1
11	569	Kalakaua Avenue	5	27.4	5.2	7.1	5.8	4.9	6.1	7.8	7	10	7.4	9.8
12	1194	McCully Street	28.6	10.4	29.6	28.2	27.6	28	27.2	21.2	5.9	22.3	6.8	31.2
13	1707	Isenberg Street	27.8	16.7	31.9	12.2	20.6	18.3	23.6	10	17.8	25	25.6	34.5
14	554	University Avenue	15	27.9	19	3.4	9.3	9.1	13.8	4.5	21.2	11.9	22.7	34.3
15	784	Date/Kamoku Street	27.6	30.3	18.9	24.9	4	5	3.8	33.6	3.5	5.1	4.3	5.8
Total	12876		16.6	15.9	17.1	15.9	13.1	14.9	13.3	12.1	10.9	14.2	11	18.6

Total Delay														
1	0	South Street												
2	750	Cooke Street	12	9	10	22	45	69	49	41	47	72	52	8
3	1171	Ward Avenue	11	67	37	6	9	14	7	103	101	36	94	10
4	1374	Kamakee Street	7	11	6	8	11	9	8	30	28	9	11	39
5	735	Pensacola Street	12	3	2	4	6	3	6	5	5	4	7	5
6	620	Piikoi Street	8	3	33	4	3	3	4	2	2	34	8	1
7	766	Kona Iki Street	5	15	5	31	29	5	41	34	39	11	21	25
8	653	Keeaumoku Street	45	14	1	4	3	9	8	6	4	5	59	4
9	961	Kaheka Street/Mahukona Street	12	8	45	3	4	6	12	10	5	8	9	5
10	1038	Atkinson Drive	85	89	48	17	96	16	74	47	12	44	37	32
11	569	Kalakaua Avenue	65	4	65	46	57	66	52	37	43	29	44	31
12	1194	McCully Street	8	58	7	8	9	9	10	18	118	16	98	5
13	1707	Isenberg Street	12	41	7	65	27	35	21	86	36	18	16	4
14	554	University Avenue	14	4	10	103	31	33	17	80	8	22	7	1
15	784	Date/Kamoku Street	5	4	13	8	119	91	127	2	135	89	110	78
Total	12876		301	330	289	329	449	368	436	501	583	397	573	248

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Contraflow - Kapiolani Boulevard Eastbound AM

Time Less Than 0 MPH														
1	0	South Street												
2	750	Cooke Street	0	0	0	3	24	52	28	9	24	40	23	0
3	1171	Ward Avenue	0	43	20	0	0	0	0	72	84	2	59	0
4	1374	Kamakee Street	0	0	0	0	0	0	0	12	14	0	0	25
5	735	Pensacola Street	0	0	0	0	0	0	0	0	0	0	0	0
6	620	Piikoi Street	0	0	16	0	0	0	0	0	0	16	0	0
7	766	Kona Iki Street	0	0	0	15	15	0	10	16	25	0	0	13
8	653	Keeaumoku Street	27	0	0	0	0	0	0	0	0	0	38	0
9	961	Kaheka Street/Mahukona Street	0	0	29	0	0	0	0	0	0	0	0	0
10	1038	Atkinson Drive	64	70	28	0	78	0	37	34	0	15	14	10
11	569	Kalakaua Avenue	46	0	48	14	42	45	36	5	18	5	19	5
12	1194	McCully Street	0	31	0	0	0	0	0	0	87	0	57	0
13	1707	Isenberg Street	0	18	0	9	0	0	0	19	10	0	0	0
14	554	University Avenue	2	0	0	50	0	6	0	44	0	0	0	0
15	784	Date/Kamoku Street	0	0	0	0	92	74	99	0	98	65	89	53
Total	12876		139	162	141	91	251	177	210	211	360	143	299	106

Time Less Than 35 MPH														
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	48	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	5
7	766	Kona Iki Street	19	28	18	44	42	18	54	47	49	24	34	34
8	653	Keeaumoku Street	56	25	9	15	15	20	19	18	15	16	70	15
9	961	Kaheka Street/Mahukona Street	29	25	58	20	17	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	53	39	54	41
12	1194	McCully Street	29	78	28	29	30	29	30	39	139	36	119	19
13	1707	Isenberg Street	42	70	36	94	56	64	50	115	65	47	45	27
14	554	University Avenue	24	14	20	113	41	43	27	90	18	32	17	9
15	784	Date/Kamoku Street	17	16	25	22	133	105	141	8	148	102	123	92
Total	12876		525	551	504	553	670	591	659	717	798	619	795	445

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Contraflow - Kapiolani Boulevard Eastbound AM

Time Less Than 55 MPH														
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	18	54	47	52	24	34	39
8	653	Keeaumoku 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	53	39	54	41
12	1194	McCully Street	29	78	28	29	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	Date/Kamoku Street	17	16	25	22	133	105	141	14	148	102	123	92
Total	12876		525	551	512	553	674	591	659	723	805	619	795	473

Travel Time (min)														
1	0	South Street												
2	750	Cooke Street	0.42	0.37	0.38	0.58	0.97	1.37	1.03	0.90	1.00	1.42	1.08	0.35
3	1171	Ward Avenue	0.52	1.45	0.95	0.43	0.48	0.57	0.47	2.07	2.02	0.93	1.90	0.50
4	1374	Kamakee Street	0.52	0.58	0.50	0.53	0.58	0.55	0.53	0.88	0.87	0.55	0.58	1.05
5	735	Pensacola Street	0.42	0.27	0.25	0.28	0.32	0.27	0.32	0.30	0.30	0.28	0.33	0.30
6	620	Piikoi Street	0.32	0.23	0.73	0.25	0.23	0.23	0.25	0.22	0.22	0.75	0.32	0.20
7	766	Kona Iki Street	0.32	0.47	0.30	0.73	0.70	0.30	0.90	0.78	0.87	0.40	0.57	0.65
8	653	Keeaumoku Street	0.93	0.42	0.22	0.25	0.25	0.33	0.32	0.30	0.25	0.27	1.17	0.25
9	961	Kaheka Street/Mahukona Street	0.48	0.42	1.03	0.33	0.35	0.38	0.47	0.43	0.35	0.42	0.42	0.35
10	1038	Atkinson Drive	1.72	1.78	1.10	0.58	1.90	0.57	1.53	1.08	0.50	1.03	0.92	0.83
11	569	Kalakaua Avenue	1.25	0.23	1.25	0.93	1.12	1.27	1.03	0.78	0.88	0.65	0.90	0.68
12	1194	McCully Street	0.48	1.30	0.47	0.48	0.50	0.48	0.50	0.65	2.32	0.60	1.98	0.43
13	1707	Isenberg Street	0.70	1.17	0.60	1.57	0.93	1.07	0.83	1.92	1.08	0.78	0.75	0.57
14	554	University Avenue	0.40	0.23	0.33	1.88	0.68	0.72	0.45	1.50	0.30	0.53	0.28	0.18
15	784	Date/Kamoku Street	0.30	0.28	0.43	0.37	2.22	1.75	2.35	0.25	2.48	1.70	2.05	1.53
Total	12876		8.07	8.68	7.78	6.97	8.33	7.38	8.18	10.32	10.65	8.08	10.92	6.17

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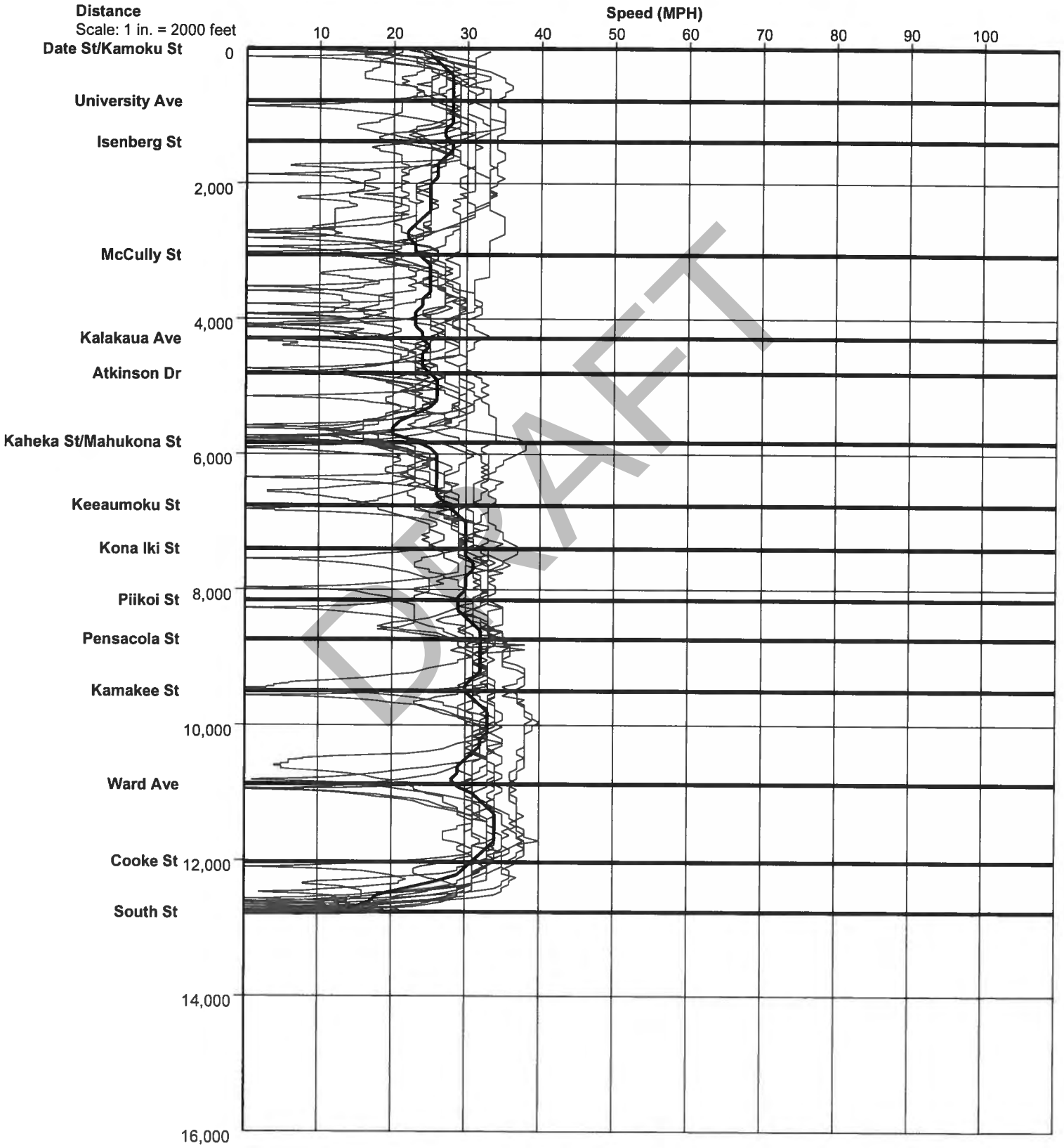
Wilson Okamoto Corporation

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



Contraflow - Kapiolani Boulevard Westbound AM

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

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Contraflow - Kapiolani Boulevard Westbound AM

Average Speed														
1	0	Date/Kamoku Street												
2	771	University Avenue	31.9	29.2	25.6	26	22.6	27.4	23.4	25	19.4	28.1	4.6	26
3	606	Isenberg Street	33	25.3	31.4	33.8	24	32.4	26.8	28.8	19	25.8	9.6	29.6
4	1671	McCully Street	30.6	24.8	28.2	33.7	28.9	23.6	8.5	8.3	11	24.8	16.5	12.4
5	1232	Kalakaua Avenue	26.8	26.2	26.6	31.7	28.8	21.6	4.8	5.8	14.2	26.3	26.6	8.1
6	517	Atkinson Drive	20.7	24.4	28.2	30.4	29.3	26.1	12.1	9.3	14.1	24.6	24.8	18.9
7	1025	Kaheka Street/Mahukona Street	16.4	18.9	17.5	11.1	32.2	16.3	11	24.7	9.9	19.3	12.1	25.6
8	930	Keeaumoku Street	24.7	24.3	28.5	25.9	32.3	32.7	17.4	33.4	20.7	23.8	14.7	9
9	640	Kona Iki Street	30.5	29.5	31.4	29.4	30.7	31	29.2	34.5	27.6	27.9	23.4	12.7
10	755	Piikoi Street	32.4	33.3	33.1	32.6	31.1	28.3	26.8	33.8	31.2	33.1	9.4	15.9
11	577	Pensacola Street	29.4	32.3	32.9	34.3	30.5	24.6	31.6	33.3	31.9	32.3	8.5	23
12	765	Kamakee Street	32.4	36.3	33.7	32.4	31.3	30.2	31.1	1.4	32.1	36.5	31.8	8
13	1374	Ward Avenue	32.7	37.4	32.6	31.9	32.4	11.6	30	30.4	33.6	37.7	29.3	16.7
14	1148	Cooke Street	32.2	36.8	32.3	32.4	34.8	32.6	29.1	8.2	32.7	37	14	28.5
15	739	South Street	5.2	4.4	5.4	9.8	6.5	4.3	6.7	24.9	6.3	5.2	8.2	5.7
Total	12750		22.6	22.3	23	24.5	24.7	18.2	12.9	14.3	16.4	22.3	13.1	13.1

Total Delay														
1	0	Date/Kamoku Street												
2	771	University Avenue	3	5	8	7	10	6	10	8	14	6	104	7
3	606	Isenberg Street	2	5	3	1	6	2	5	3	11	6	34	3
4	1671	McCully Street	9	17	12	5	11	20	105	107	74	17	39	62
5	1232	Kalakaua Avenue	10	11	10	5	8	17	154	125	38	11	10	82
6	517	Atkinson Drive	7	6	4	3	3	5	21	29	17	6	5	10
7	1025	Kaheka Street/Mahukona Street	25	19	22	44	4	25	44	10	52	18	39	9
8	930	Keeaumoku Street	10	11	6	8	3	3	21	3	15	10	27	56
9	640	Kona Iki Street	3	3	3	3	3	3	4	2	5	5	8	24
10	755	Piikoi Street	3	2	2	3	3	6	6	2	3	2	41	19
11	577	Pensacola Street	4	2	1	2	3	6	2	2	2	2	37	7
12	765	Kamakee Street	3	1	2	2	3	4	3	3	2	1	3	49
13	1374	Ward Avenue	5	1	5	5	5	57	8	7	4	1	9	32
14	1148	Cooke Street	5	1	5	4	2	4	6	76	3	1	36	8
15	739	South Street	76	83	75	39	64	101	65	7	67	83	48	72
Total	12750		165	167	158	131	128	259	454	384	307	169	440	440

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Contraflow - Kapiolani Boulevard Westbound AM

Time Less Than 0 MPH														
1	0	Date/Kamoku Street												
2	771	University Avenue	0	0	0	0	0	0	0	0	0	0	88	0
3	606	Isenberg Street	0	0	0	0	0	0	0	0	39	0	15	0
4	1671	McCully Street	0	0	0	0	0	0	54	49	11	0	19	22
5	1232	Kalakaua Avenue	0	0	0	0	0	0	93	65	4	0	0	54
6	517	Atkinson Drive	0	0	0	0	0	0	0	9	30	0	0	0
7	1025	Kaheka Street/Mahukona Street	1	0	0	23	0	5	19	0	0	0	12	0
8	930	Keeaumoku Street	0	0	0	0	0	0	1	0	0	0	0	9
9	640	Kona Iki Street	0	0	0	0	0	0	0	0	0	0	0	1
10	755	Piikoi Street	0	0	0	0	0	0	0	0	0	0	23	4
11	577	Pensacola Street	0	0	0	0	0	0	0	0	0	0	22	0
12	765	Kamakee Street	0	0	0	0	0	0	0	0	0	0	0	16
13	1374	Ward Avenue	0	0	0	0	0	29	0	0	0	0	0	0
14	1148	Cooke Street	0	0	0	0	0	0	0	64	0	0	19	0
15	739	South Street	64	73	56	24	48	74	32	0	50	73	32	50
Total	12750		65	73	56	47	48	108	199	187	134	73	230	156

Time Less Than 35 MPH														
1	0	Date/Kamoku Street												
2	771	University Avenue	17	19	21	21	24	15	23	22	28	19	117	21
3	606	Isenberg Street	12	16	13	12	17	9	15	14	21	16	45	14
4	1671	McCully Street	37	46	41	30	40	49	134	136	103	46	68	91
5	1232	Kalakaua Avenue	32	32	31	26	29	38	175	146	59	32	32	103
6	517	Atkinson Drive	16	15	13	12	12	14	30	38	26	15	14	19
7	1025	Kaheka Street/Mahukona Street	43	36	40	62	22	43	62	26	70	36	57	27
8	930	Keeaumoku Street	26	27	22	25	19	19	37	14	31	26	43	72
9	640	Kona Iki Street	14	15	14	14	15	14	15	9	16	16	19	35
10	755	Piikoi Street	16	14	16	16	16	19	19	12	16	16	54	32
11	577	Pensacola Street	14	9	11	9	13	16	13	11	12	10	47	18
12	765	Kamakee Street	16	0	15	16	17	16	16	16	16	0	16	62
13	1374	Ward Avenue	28	0	28	29	29	80	32	31	28	0	32	56
14	1148	Cooke Street	25	0	25	24	10	13	26	96	23	0	56	28
15	739	South Street	88	88	87	52	77	112	78	20	80	89	61	85
Total	12750		384	317	377	348	340	457	675	591	529	321	661	663

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Contraflow - Kapiolani Boulevard Westbound AM

Time Less Than 55 MPH														
1	0	Date/Kamoku Street												
2	771	University Avenue	17	19	21	21	24	20	23	22	28	19	117	21
3	606	Isenberg Street	12	16	13	12	17	12	15	14	21	16	45	14
4	1671	McCully Street	37	46	41	34	40	49	134	136	103	46	68	91
5	1232	Kalakaua Avenue	32	32	31	26	29	38	175	146	59	32	32	103
6	517	Atkinson Drive	16	15	13	12	12	14	30	38	26	15	14	19
7	1025	Kaheka Street/Mahukona Street	43	36	40	62	22	43	62	28	70	36	57	27
8	930	Keeaumoku Street	26	27	22	25	19	19	37	19	31	26	43	72
9	640	Kona Iki Street	14	15	14	14	15	14	15	13	16	16	19	35
10	755	Piikoi Street	16	15	16	16	16	19	19	15	16	16	54	32
11	577	Pensacola Street	14	12	11	12	13	16	13	12	13	12	47	18
12	765	Kamakee Street	16	15	16	16	17	17	16	16	16	14	16	62
13	1374	Ward Avenue	28	25	28	29	29	80	32	31	28	25	32	56
14	1148	Cooke Street	25	21	25	24	22	24	26	96	23	21	56	28
15	739	South Street	88	93	87	52	77	112	78	20	80	96	61	85
Total	12750		384	387	378	355	352	477	675	606	530	390	661	663

Travel Time (min)														
1	0	Date/Kamoku Street												
2	771	University Avenue	0.28	0.32	0.35	0.35	0.40	0.33	0.38	0.37	0.47	0.32	1.95	0.35
3	606	Isenberg Street	0.20	0.27	0.22	0.20	0.28	0.20	0.25	0.23	0.35	0.27	0.75	0.23
4	1671	McCully Street	0.62	0.77	0.68	0.57	0.67	0.82	2.23	2.27	1.72	0.77	1.13	1.52
5	1232	Kalakaua Avenue	0.53	0.53	0.52	0.43	0.48	0.63	2.92	2.43	0.98	0.53	0.53	1.72
6	517	Atkinson Drive	0.27	0.25	0.22	0.20	0.20	0.23	0.50	0.63	0.43	0.25	0.23	0.32
7	1025	Kaheka Street/Mahukona Street	0.72	0.60	0.67	1.03	0.37	0.72	1.03	0.47	1.17	0.60	0.95	0.45
8	930	Keeaumoku Street	0.43	0.45	0.37	0.42	0.32	0.32	0.62	0.32	0.52	0.43	0.72	1.20
9	640	Kona Iki Street	0.23	0.25	0.23	0.23	0.25	0.23	0.25	0.22	0.27	0.27	0.32	0.58
10	755	Piikoi Street	0.27	0.25	0.27	0.27	0.27	0.32	0.32	0.25	0.27	0.27	0.90	0.53
11	577	Pensacola Street	0.23	0.20	0.18	0.20	0.22	0.27	0.22	0.20	0.22	0.20	0.78	0.30
12	765	Kamakee Street	0.27	0.25	0.27	0.27	0.28	0.28	0.27	0.27	0.27	0.23	0.27	1.03
13	1374	Ward Avenue	0.47	0.42	0.47	0.48	0.48	1.33	0.53	0.52	0.47	0.42	0.53	0.93
14	1148	Cooke Street	0.42	0.35	0.42	0.40	0.37	0.40	0.43	1.60	0.38	0.35	0.93	0.47
15	739	South Street	1.48	1.57	1.47	0.87	1.28	1.88	1.30	0.33	1.33	1.60	1.02	1.42
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

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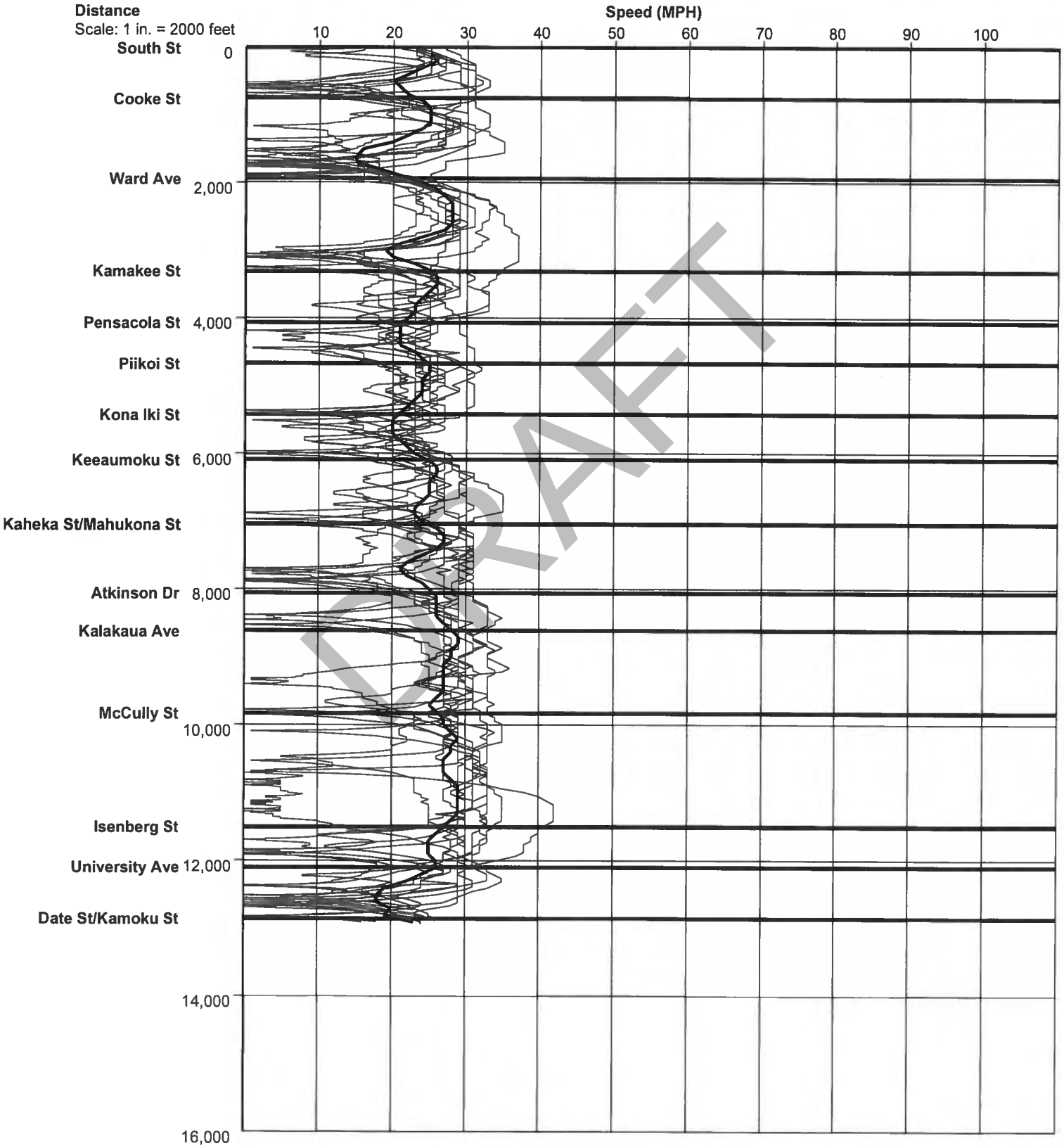
Wilson Okamoto Corporation

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



Contraflow - Kapiolani Boulevard Eastbound PM

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	23	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	Kaheka 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	Kalakaua 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	1	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	1	0	1	0	0	0	0	1	0	0	0
9	951	Kaheka 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	1	0	1	2	1	1
11	550	Kalakaua 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

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Contraflow - Kapiolani Boulevard Eastbound PM

Average Speed														
1	0	South Street												
2	748	Cooke Street	10.1	27.2	28.1	6.3	6.3	6.1	7.8	17.2	6.6	29.3	6.7	29.3
3	1187	Ward Avenue	18	9.7	13.7	28.8	8.6	12	9.8	8.8	9.1	5.8	3.9	3.5
4	1371	Kamakee Street	17	24.9	17.4	25.1	26.1	14.4	16.7	23.2	17.2	16.6	20.6	33.4
5	759	Pensacola Street	26.7	29.8	22.4	25.1	22.8	19.8	25.4	24.4	18.4	21.5	18.8	31.9
6	599	Piikoi Street	30.2	20.9	22.1	23.8	15.3	14	19.9	23.3	23.4	12.3	11.9	21.8
7	754	Kona Iki Street	9.6	30.4	25.7	24.4	20.8	19.6	25.5	21.7	23.6	21.8	17.3	25.6
8	667	Keeaumoku Street	9.7	16.9	23.1	5.9	21.6	18.5	20	23	13.5	15.7	19.1	24.2
9	951	Kaheka Street/Mahukona Street	22.1	9.7	27.3	25.6	25.3	21.1	29.6	8.5	19.4	19.6	28.7	32
10	1017	Atkinson Drive	13.5	28.7	30	8.3	26.4	27.5	15.5	24.4	9.2	10.2	11.2	10.8
11	550	Kalakaua Avenue	8.3	32.4	29.2	25.7	27.4	33	25.5	5.9	6	26.4	27.5	27.9
12	1222	McCully Street	25.2	28.3	8.5	8.6	26.1	32	32.1	29.1	26.7	27.3	21.9	30
13	1674	Isenberg Street	28.8	19.6	30.7	4.3	11.1	26.3	25.2	31.6	28	30.8	28.7	28.7
14	593	University Avenue	29.5	6	31.8	25	30.2	36.1	29.1	6.6	27.3	4.2	19.8	28.6
15	754	Date/Kamoku Street	27.6	10.1	10.5	27.8	15.2	4.3	4.2	3.4	3.5	3.1	4.1	4.3
Total	12846		17	16.5	18.8	10.8	15.8	14.9	15.3	13.2	12.1	11.5	11.4	13.6

Total Delay														
1	0	South Street												
2	748	Cooke Street	39	6	6	71	69	72	55	17	64	5	66	5
3	1187	Ward Avenue	24	64	38	7	73	47	61	72	69	117	186	206
4	1371	Kamakee Street	31	14	29	13	13	41	32	16	30	33	22	4
5	759	Pensacola Street	6	4	10	8	10	13	7	8	15	12	15	3
6	599	Piikoi Street	2	9	8	7	16	19	10	7	7	22	24	9
7	754	Kona Iki Street	41	4	8	8	12	13	7	10	8	10	16	7
8	667	Keeaumoku Street	35	16	8	67	9	13	12	8	22	17	12	7
9	951	Kaheka Street/Mahukona Street	13	50	8	9	9	15	5	60	17	17	6	4
10	1017	Atkinson Drive	34	7	6	67	9	8	26	11	59	51	43	47
11	550	Kalakaua Avenue	36	2	3	5	4	1	5	50	52	4	4	4
12	1222	McCully Street	12	8	76	75	10	5	5	8	11	10	17	6
13	1674	Isenberg Street	11	29	9	236	74	15	16	7	12	8	11	11
14	593	University Avenue	3	58	2	6	3	0	4	52	4	85	10	4
15	754	Date/Kamoku Street	6	37	34	5	20	103	106	112	134	150	115	103
Total	12846		293	308	245	584	331	365	351	438	504	541	547	420

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Contraflow - Kapiolani Boulevard Eastbound PM

Time Less Than 0 MPH														
1	0	South Street												
2	748	Cooke Street	16	0	0	51	57	43	30	0	38	0	41	0
3	1187	Ward Avenue	1	40	15	0	46	21	26	38	22	73	126	147
4	1371	Kamakee Street	6	0	0	0	0	16	7	0	0	15	0	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	1	0	0	0	0	0	0
7	754	Kona Iki Street	26	0	0	0	0	0	0	0	0	0	0	0
8	667	Keeaumoku Street	12	0	0	50	0	0	0	0	0	0	0	0
9	951	Kaheka Street/Mahukona Street	0	32	0	0	0	0	0	27	0	0	0	0
10	1017	Atkinson Drive	6	0	0	44	0	0	2	0	43	11	25	24
11	550	Kalakaua Avenue	7	0	0	0	0	0	0	35	35	0	0	0
12	1222	McCully Street	0	0	59	24	0	0	0	0	0	0	0	0
13	1674	Isenberg Street	0	0	0	73	57	0	0	0	0	0	0	0
14	593	University Avenue	0	37	0	0	0	0	0	26	0	43	0	0
15	754	Date/Kamoku Street	0	19	18	0	0	88	82	94	96	115	84	85
Total	12846		74	128	92	242	160	169	147	220	234	257	276	256

Time Less Than 35 MPH														
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	26	93	67	81	93	90	137	207	226
4	1371	Kamakee Street	55	38	53	37	36	65	56	40	54	56	45	15
5	759	Pensacola Street	20	17	23	21	23	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	Kaheka Street/Mahukona Street	29	66	24	25	25	31	22	77	33	33	23	19
10	1017	Atkinson Drive	52	24	23	84	27	26	43	29	77	69	61	65
11	550	Kalakaua Avenue	46	12	13	15	14	11	15	59	61	14	14	14
12	1222	McCully Street	33	29	97	96	31	23	26	29	32	31	38	27
13	1674	Isenberg Street	40	58	38	265	103	30	45	36	41	37	40	40
14	593	University Avenue	13	68	12	16	14	4	14	62	14	96	20	14
15	754	Date/Kamoku Street	19	50	46	17	33	115	118	122	147	163	128	115
Total	12846		518	530	465	803	554	563	573	659	727	764	770	627

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Contraflow - Kapiolani Boulevard Eastbound PM

Time Less Than 55 MPH														
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	23	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	Kaheka 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	Kalakaua 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	46	17	33	115	118	122	147	163	128	115
Total	12846		518	530	465	805	554	587	573	659	727	764	770	641

Travel Time (min)														
1	0	South Street												
2	748	Cooke Street	0.87	0.32	0.32	1.40	1.37	1.42	1.13	0.50	1.28	0.30	1.32	0.30
3	1187	Ward Avenue	0.75	1.42	0.98	0.47	1.55	1.12	1.35	1.55	1.50	2.28	3.45	3.77
4	1371	Kamakee Street	0.92	0.63	0.88	0.62	0.60	1.08	0.93	0.67	0.90	0.93	0.75	0.47
5	759	Pensacola Street	0.33	0.28	0.38	0.35	0.38	0.43	0.35	0.35	0.47	0.42	0.47	0.27
6	599	Piikoi Street	0.22	0.32	0.30	0.28	0.45	0.50	0.33	0.30	0.30	0.55	0.57	0.32
7	754	Kona Iki Street	0.90	0.28	0.35	0.35	0.42	0.43	0.33	0.38	0.35	0.38	0.48	0.33
8	667	Keeaumoku Street	0.78	0.47	0.32	1.32	0.35	0.40	0.40	0.33	0.57	0.48	0.40	0.32
9	951	Kaheka Street/Mahukona Street	0.48	1.10	0.40	0.42	0.42	0.52	0.37	1.28	0.55	0.55	0.38	0.33
10	1017	Atkinson Drive	0.87	0.40	0.38	1.40	0.45	0.43	0.72	0.48	1.28	1.15	1.02	1.08
11	550	Kalakaua Avenue	0.77	0.20	0.22	0.25	0.23	0.18	0.25	0.98	1.02	0.23	0.23	0.23
12	1222	McCully Street	0.55	0.48	1.62	1.60	0.52	0.43	0.43	0.48	0.53	0.52	0.63	0.45
13	1674	Isenberg Street	0.67	0.97	0.63	4.42	1.72	0.73	0.75	0.60	0.68	0.62	0.67	0.67
14	593	University Avenue	0.22	1.13	0.20	0.27	0.23	0.18	0.23	1.03	0.23	1.60	0.33	0.23
15	754	Date/Kamoku Street	0.32	0.83	0.78	0.30	0.55	1.93	1.98	2.05	2.45	2.72	2.13	1.93
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

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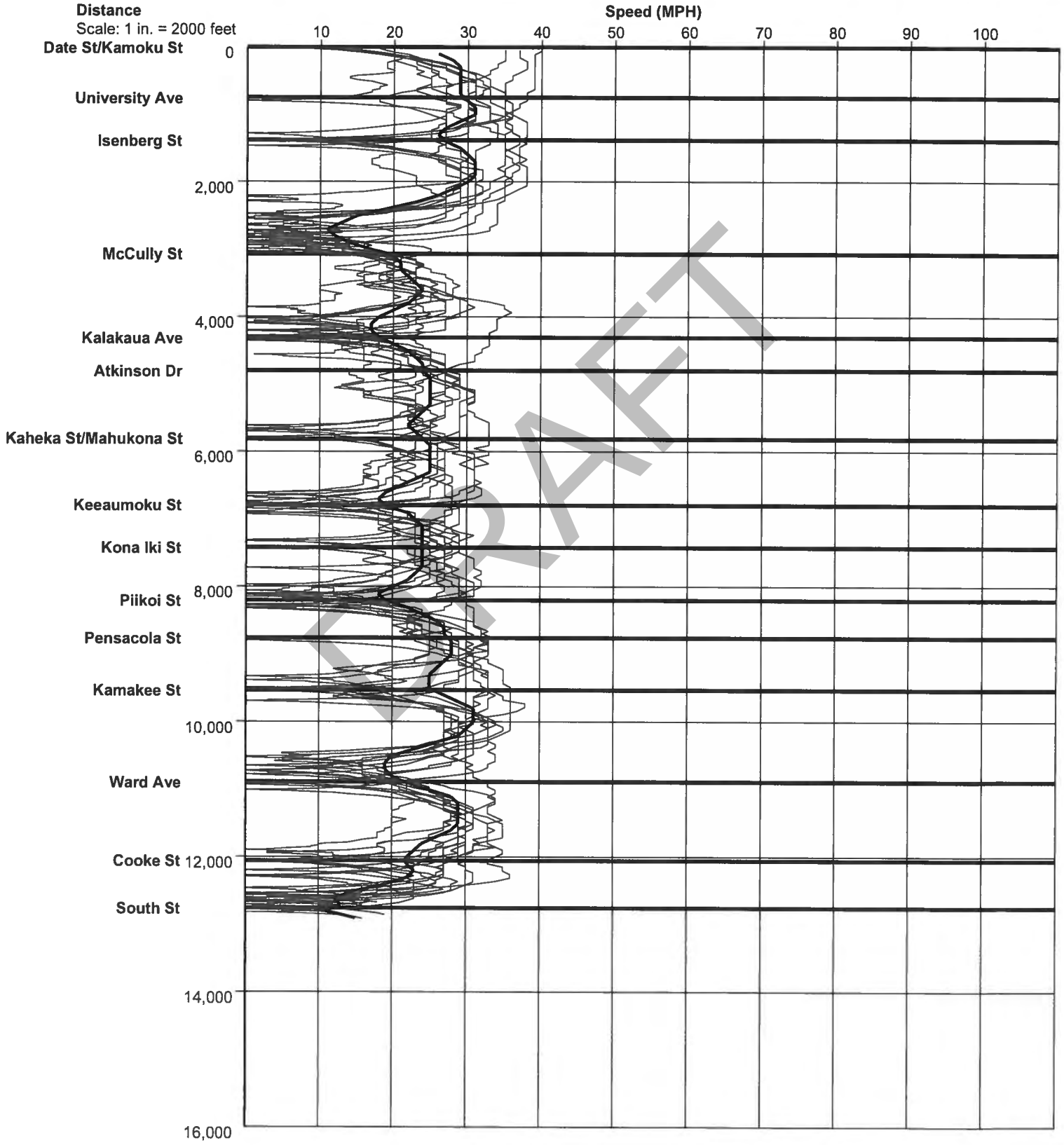
Wilson Okamoto Corporation

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



Contraflow - Kapiolani Boulevard Westbound PM

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	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	Kalakaua Avenue	58	32	88	96	82	97	91	78	38	38	75	78
6	489	Atkinson Drive	35	11	14	19	26	14	15	18	51	72	22	15
7	1016	Kaheka 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
Number of Stops														
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	Kalakaua Avenue	1	0	1	1	1	1	1	1	0	0	1	1
6	489	Atkinson Drive	0	0	0	0	1	0	0	0	1	1	0	0
7	1016	Kaheka 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

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Contraflow - Kapiolani Boulevard Westbound PM

Average Speed														
1	0	Date/Kamoku Street												
2	745	University Avenue	28.8	24.9	24.3	36.3	24.3	24.4	23.5	24	22.5	38.9	23	17.1
3	633	Isenberg Street	24.3	33	8.5	36.6	29.4	34.3	26.4	8.9	26.4	36.2	9.4	5
4	1686	McCully Street	8.8	2.8	6.3	8.6	12	11.5	5.9	6.2	10.2	15.5	6.5	4.4
5	1239	Kalakaua Avenue	14.6	26.6	9.6	8.9	10.4	8.5	9.3	10.8	21.8	22.2	11.1	10.8
6	489	Atkinson Drive	10.1	30.4	24.7	17.1	13	23.9	23.3	19.2	6.9	4.6	15.1	22.3
7	1016	Kaheka Street/Mahukona Street	30.8	25.4	10.1	14.2	12.1	29.2	17.3	21.6	20.5	28.8	19.1	26.2
8	980	Keeaumoku Street	30.6	8.7	23.5	21.5	22.9	30	24.3	9.2	9.5	27.9	9.7	10.7
9	628	Kona Iki Street	6.2	22.3	10.9	6.9	5.9	25.6	10	20.7	24.9	5.9	21.4	23.9
10	780	Piikoi Street	28	7.7	2.2	23.4	7.4	10.2	23	8.2	30.2	25.8	9.1	9.4
11	557	Pensacola Street	5.8	21.5	23.9	7.9	23.2	22.8	31.4	20.2	6	6	20.5	22.1
12	771	Kamakee Street	32	20.6	11.1	28.6	18.7	17	11.3	11.6	33.1	27.8	31.4	30.3
13	1357	Ward Acenue	31.6	18.7	9.3	11.9	12.6	21.6	8.7	10.7	14.4	18.4	22.2	30.5
14	1169	Cooke Street	8.8	12.5	26	22	9	18.3	28.1	27.4	25.5	9.3	27.7	33.6
15	699	South Street	14	5.6	2.7	2.3	8.4	4.8	7.9	5.8	6.9	6.3	12.2	8.6
Total	12749		13.9	9.5	10	10.5	11.8	14.7	12.1	10.9	13.9	13.5	13	11.2

Total Delay														
1	0	Date/Kamoku Street												
2	745	University Avenue	5	8	9	1	9	9	9	9	10	0	10	17
3	633	Isenberg Street	7	2	37	1	3	1	5	36	5	0	34	79
4	1686	McCully Street	101	389	155	104	66	71	165	156	85	46	149	230
5	1239	Kalakaua Avenue	37	10	67	75	61	76	70	57	17	17	54	57
6	489	Atkinson Drive	26	2	5	11	17	6	6	9	42	63	14	6
7	1016	Kaheka Street/Mahukona Street	5	9	50	32	39	6	22	14	16	7	19	9
8	980	Keeaumoku Street	5	58	11	14	12	5	11	55	54	7	51	44
9	628	Kona Iki Street	61	9	29	54	64	6	30	10	7	60	9	7
10	780	Piikoi Street	5	55	9	9	58	39	10	49	3	7	46	44
11	557	Pensacola Street	53	8	6	39	7	7	2	9	53	52	9	7
12	771	Kamakee Street	3	12	34	5	14	18	33	32	3	6	3	4
13	1357	Ward Acenue	5	27	77	54	51	20	82	64	41	27	18	6
14	1169	Cooke Street	71	43	11	16	69	23	9	9	11	67	9	3
15	699	South Street	21	62	144	198	45	85	41	63	58	64	27	41
Total	12749		405	694	644	613	515	372	495	572	405	423	452	554

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Contraflow - Kapiolani Boulevard Westbound PM

Time Less Than 0 MPH														
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	29	0	0	0	0	24	0	0	13	66
4	1686	McCully Street	63	258	100	53	30	48	117	85	41	27	69	152
5	1239	Kalakaua Avenue	5	0	30	19	21	57	49	18	0	0	18	23
6	489	Atkinson Drive	12	0	0	0	0	0	0	0	27	50	0	0
7	1016	Kaheka Street/Mahukona Street	0	0	16	2	11	0	4	0	0	0	0	0
8	980	Keeaumoku Street	0	24	0	0	0	0	0	16	17	0	26	6
9	628	Kona Iki Street	30	0	6	32	32	0	20	0	0	36	0	0
10	780	Piikoi Street	0	28	0	0	31	18	0	24	0	0	26	13
11	557	Pensacola Street	36	0	0	25	0	0	0	0	41	38	0	0
12	771	Kamakee Street	0	0	11	0	0	4	20	12	0	0	0	0
13	1357	Ward Acenue	0	0	44	19	28	0	56	39	10	4	0	0
14	1169	Cooke Street	54	9	0	0	53	5	0	0	0	30	0	0
15	699	South Street	2	37	92	155	30	62	19	43	30	38	5	28
Total	12749		202	356	328	305	236	194	285	261	166	223	157	288

Time Less Than 35 MPH														
1	0	Date/Kamoku Street												
2	745	University Avenue	18	21	21	2	22	22	22	22	23	0	23	30
3	633	Isenberg Street	18	13	43	0	14	5	16	46	16	0	45	90
4	1686	McCully Street	130	418	184	128	95	89	194	185	114	61	178	247
5	1239	Kalakaua Avenue	58	30	88	96	82	97	91	78	38	38	75	78
6	489	Atkinson Drive	35	11	14	19	26	14	15	18	51	72	22	15
7	1016	Kaheka 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	11	19	17	18
13	1357	Ward Acenue	29	50	100	77	74	43	105	87	53	50	41	24
14	1169	Cooke Street	89	63	31	36	89	43	29	29	31	87	29	23
15	699	South Street	33	71	154	210	57	96	51	73	70	76	39	48
Total	12749		625	910	857	802	735	572	713	789	609	605	672	754

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Contraflow - Kapiolani Boulevard Westbound PM

Time Less Than 55 MPH														
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	Kalakaua Avenue	58	32	88	96	82	97	91	78	38	38	75	78
6	489	Atkinson Drive	35	11	14	19	26	14	15	18	51	72	22	15
7	1016	Kaheka 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	71	154	210	57	96	51	73	70	76	39	51
Total	12749		627	912	863	831	735	590	713	790	625	644	672	775

Travel Time (min)														
1	0	Date/Kamoku Street												
2	745	University Avenue	0.30	0.35	0.37	0.23	0.37	0.37	0.37	0.37	0.38	0.23	0.38	0.50
3	633	Isenberg Street	0.30	0.22	0.80	0.20	0.23	0.20	0.27	0.78	0.27	0.18	0.75	1.50
4	1686	McCully Street	2.17	6.97	3.07	2.22	1.58	1.67	3.23	3.08	1.90	1.25	2.97	4.32
5	1239	Kalakaua Avenue	0.97	0.53	1.47	1.60	1.37	1.62	1.52	1.30	0.63	0.63	1.25	1.30
6	489	Atkinson Drive	0.58	0.18	0.23	0.32	0.43	0.23	0.25	0.30	0.85	1.20	0.37	0.25
7	1016	Kaheka Street/Mahukona Street	0.37	0.45	1.13	0.82	0.95	0.40	0.65	0.53	0.55	0.40	0.62	0.45
8	980	Keeaumoku Street	0.37	1.25	0.47	0.52	0.48	0.37	0.47	1.20	1.18	0.40	1.13	1.02
9	628	Kona Iki Street	1.20	0.33	0.67	1.08	1.25	0.28	0.68	0.35	0.30	1.18	0.33	0.30
10	780	Piikoi Street	0.32	1.13	0.38	0.37	1.18	0.87	0.40	1.03	0.28	0.35	0.98	0.97
11	557	Pensacola Street	1.05	0.30	0.27	0.80	0.28	0.28	0.20	0.32	1.05	1.03	0.32	0.28
12	771	Kamakee Street	0.28	0.42	0.78	0.32	0.45	0.52	0.77	0.75	0.27	0.32	0.28	0.30
13	1357	Ward Acenue	0.48	0.83	1.67	1.28	1.23	0.72	1.75	1.45	1.07	0.83	0.68	0.50
14	1169	Cooke Street	1.52	1.05	0.52	0.60	1.48	0.72	0.48	0.48	0.52	1.45	0.48	0.38
15	699	South Street	0.55	1.20	2.58	3.50	0.95	1.62	0.87	1.23	1.17	1.27	0.65	0.87
Total	12749		8.38	12.97	11.30	9.75	9.82	7.52	10.55	11.47	8.73	8.02	10.07	11.68

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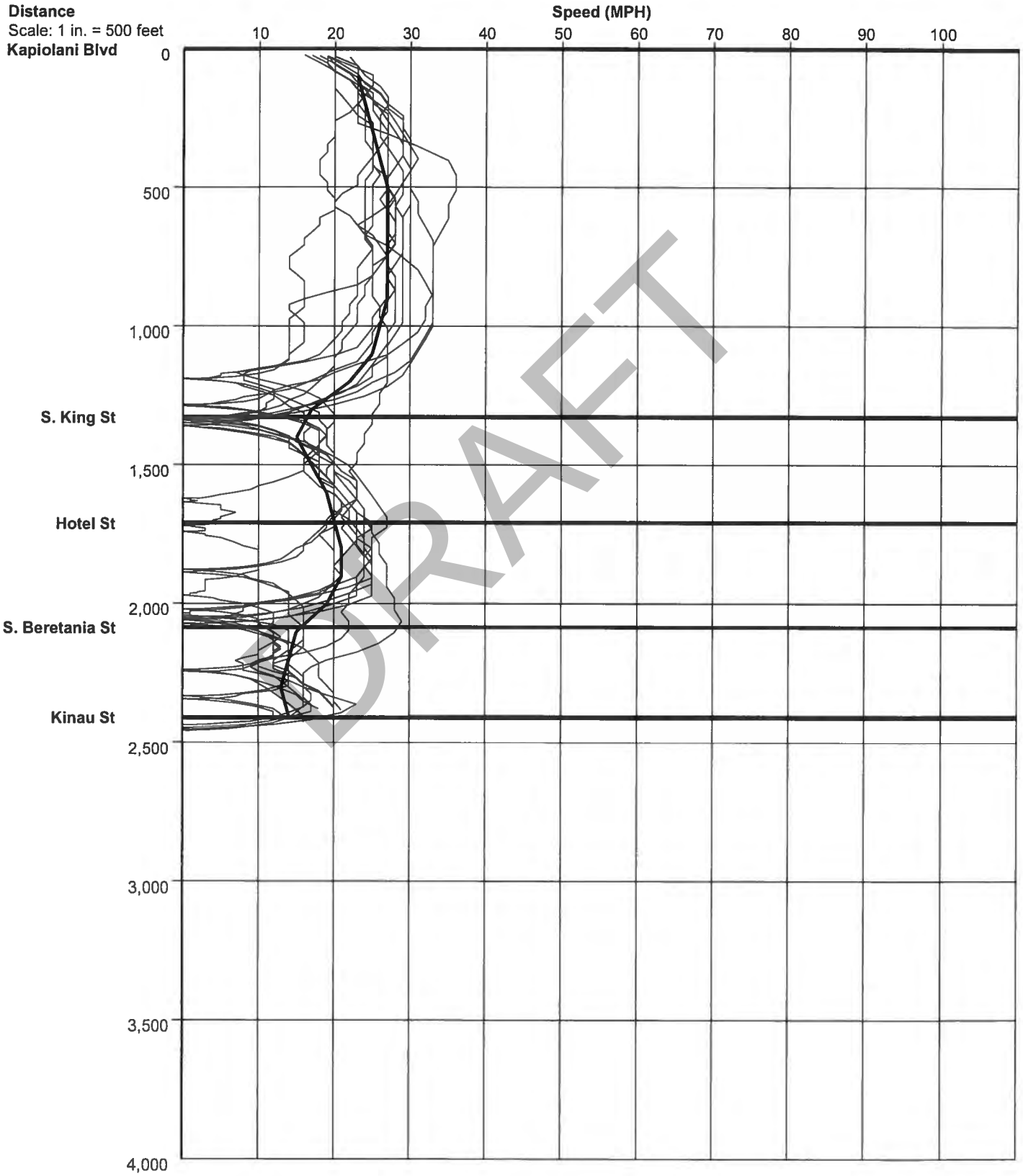
Wilson Okamoto Corporation

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

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

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

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Contraflow - Ward Avenue Northbound AM

Time Less Than 35 MPH														
1	0	Kapiolani Boulevard												
2	1326	S. King Street	36	37	43	37	46	76	30	44	57	37	66	45
3	380	Hotel Street	45	52	37	24	15	14	36	31	13	11	53	13
4	377	S. Beretania Street	10	68	69	67	66	73	11	69	67	63	131	72
5	367	Kinau Street	12	13	12	14	12	75	72	17	72	15	18	27
Total	2450		103	170	161	142	139	238	149	161	209	126	268	157
Time Less Than 55 MPH														
1	0	Kapiolani Boulevard												
2	1326	S. King Street	72	37	43	37	46	76	33	44	57	37	66	45
3	380	Hotel Street	45	52	37	24	15	14	36	31	13	11	53	13
4	377	S. Beretania Street	10	68	69	67	66	73	11	69	67	63	131	72
5	367	Kinau Street	12	13	12	14	12	75	72	17	72	15	18	27
Total	2450		139	170	161	142	139	238	152	161	209	126	268	157
Travel Time (min)														
1	0	Kapiolani Boulevard												
2	1326	S. King Street	0.60	0.62	0.72	0.62	0.77	1.27	0.55	0.73	0.95	0.62	1.10	0.75
3	380	Hotel Street	0.75	0.87	0.62	0.40	0.25	0.23	0.60	0.52	0.22	0.18	0.88	0.22
4	377	S. Beretania Street	0.17	1.13	1.15	1.12	1.10	1.22	0.18	1.15	1.12	1.05	2.18	1.20
5	367	Kinau Street	0.20	0.23	0.22	0.25	0.22	1.25	1.22	0.28	1.22	0.25	0.30	0.45
Total	2450		1.72	2.85	2.70	2.38	2.33	3.97	2.55	2.68	3.50	2.10	4.47	2.62

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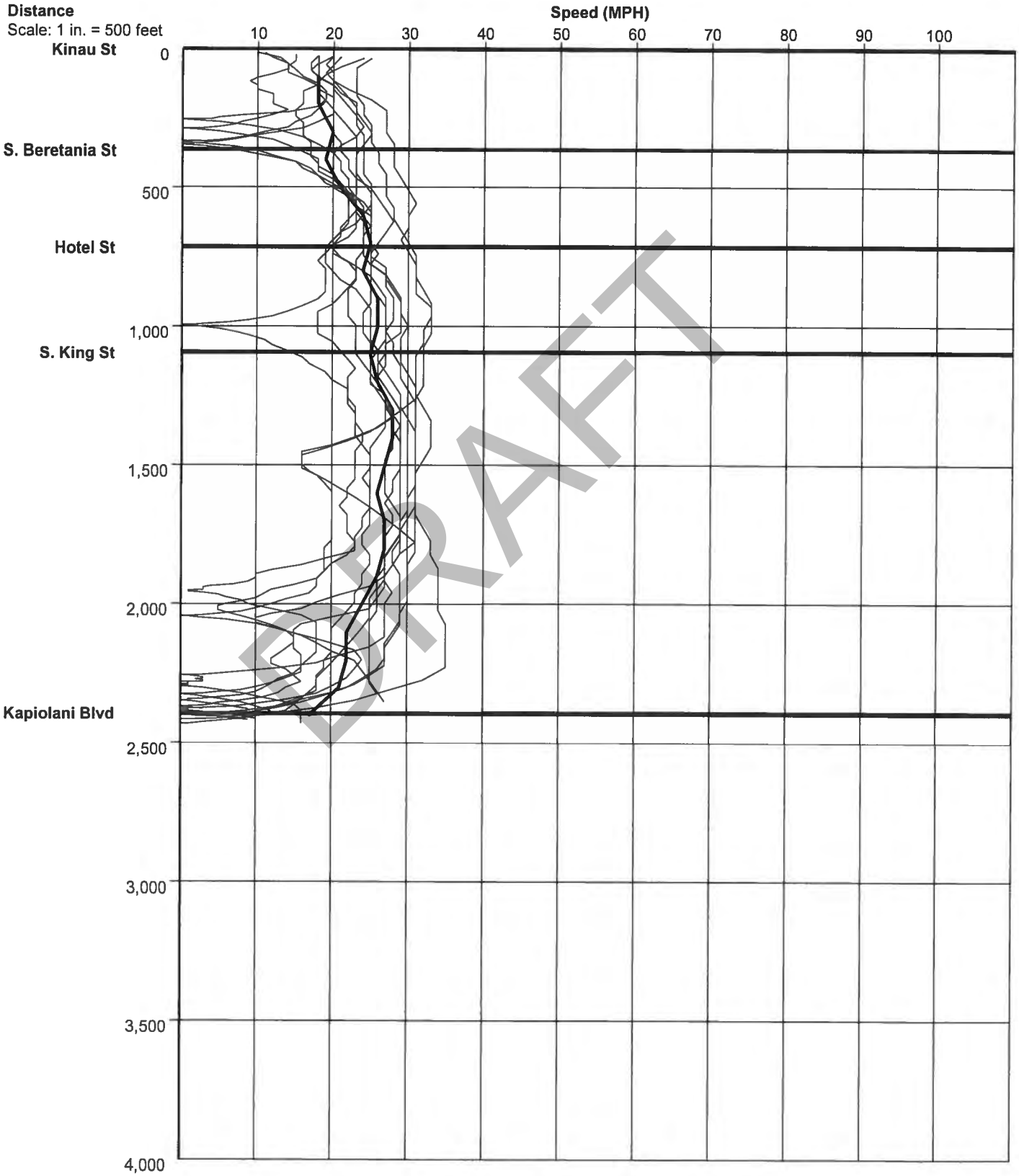
Wilson Okamoto Corporation

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



Contraflow - Ward Avenue Southbound 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
Travel Time														
1	0	Kinau Street												
2	362	S. Beretania Street	12	15	11	13	12	11	13	67	12	75	50	62
3	351	Hotel Street	11	12	10	10	10	8	11	12	9	12	10	12
4	379	S. King Street	44	10	10	10	9	8	12	13	8	11	10	9
5	1300	Kapiolani Boulevard	43	35	33	104	32	77	35	146	53	152	29	98
Total	2392		110	72	64	137	63	104	71	238	82	250	99	181
Number of Stops														
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
Average Speed														
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
Total Delay														
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
Time Less Than 0 MPH														
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

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Contraflow - Ward Avenue Southbound AM

Time Less Than 35 MPH														
1	0	Kinau Street												
2	362	S. Beretania Street	12	15	11	13	12	11	13	67	12	75	50	62
3	351	Hotel Street	11	12	10	10	10	8	11	12	9	12	10	12
4	379	S. King Street	44	10	10	10	9	8	12	13	8	11	10	9
5	1300	Kapiolani Boulevard	43	35	33	104	31	76	35	145	52	151	27	98
Total	2392		110	72	64	137	62	103	71	237	81	249	97	181
Time Less Than 55 MPH														
1	0	Kinau Street												
2	362	S. Beretania Street	12	15	11	13	12	11	13	67	12	75	50	62
3	351	Hotel Street	11	12	10	10	10	8	11	12	9	12	10	12
4	379	S. King Street	44	10	10	10	9	8	12	13	8	11	10	9
5	1300	Kapiolani Boulevard	43	35	33	104	31	76	35	145	52	151	29	98
Total	2392		110	72	64	137	62	103	71	237	81	249	99	181
Travel Time (min)														
1	0	Kinau Street												
2	362	S. Beretania Street	0.20	0.25	0.18	0.22	0.20	0.18	0.22	1.12	0.20	1.25	0.83	1.03
3	351	Hotel Street	0.18	0.20	0.17	0.17	0.17	0.13	0.18	0.20	0.15	0.20	0.17	0.20
4	379	S. King Street	0.73	0.17	0.17	0.17	0.15	0.13	0.20	0.22	0.13	0.18	0.17	0.15
5	1300	Kapiolani Boulevard	0.72	0.58	0.55	1.73	0.53	1.28	0.58	2.43	0.88	2.53	0.48	1.63
Total	2392		1.83	1.20	1.07	2.28	1.05	1.73	1.18	3.97	1.37	4.17	1.65	3.02

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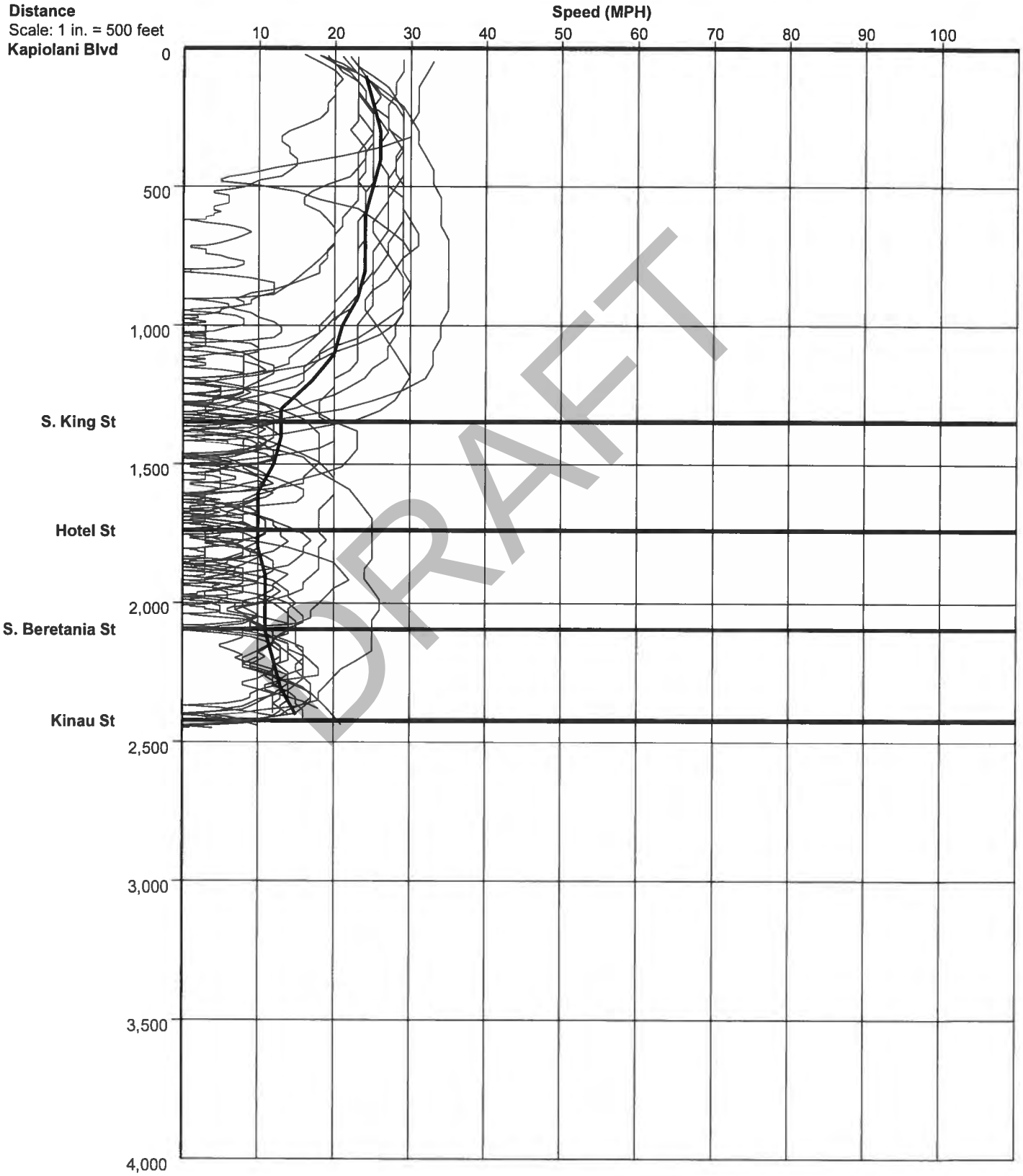
Wilson Okamoto Corporation

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



Contraflow - Ward Avenue Northbound PM

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	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	Kinau 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
Number of Stops														
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	Kinau 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
Average Speed														
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	Kinau 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
Total Delay														
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	Kinau 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
Time Less Than 0 MPH														
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	Kinau 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

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Contraflow - Ward Avenue Northbound PM

Time Less Than 35 MPH														
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	Kinau Street	11	19	73	15	18	71	78	18	13	18	71	22
Total	2421		120	165	196	199	223	343	309	711	515	821	620	308
Time Less Than 55 MPH														
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	Kinau Street	11	19	73	15	18	71	78	18	13	18	71	22
Total	2421		120	165	196	199	223	343	309	711	515	821	620	308
Travel Time (min)														
1	0	Kapiolani Boulevard												
2	1345	S. King Street	0.57	0.82	0.72	1.30	0.65	1.18	0.77	5.58	3.72	8.70	5.75	0.53
3	390	Hotel Street	1.10	0.32	0.98	0.48	0.72	2.02	1.65	3.55	1.97	1.83	1.60	2.85
4	357	S. Beretania Street	0.15	1.30	0.35	1.28	2.05	1.33	1.43	2.42	2.68	2.85	1.80	1.38
5	329	Kinau Street	0.18	0.32	1.22	0.25	0.32	1.18	1.32	0.32	0.23	0.32	1.18	0.37
Total	2421		2.00	2.75	3.27	3.32	3.73	5.72	5.17	11.87	8.60	13.70	10.33	5.13

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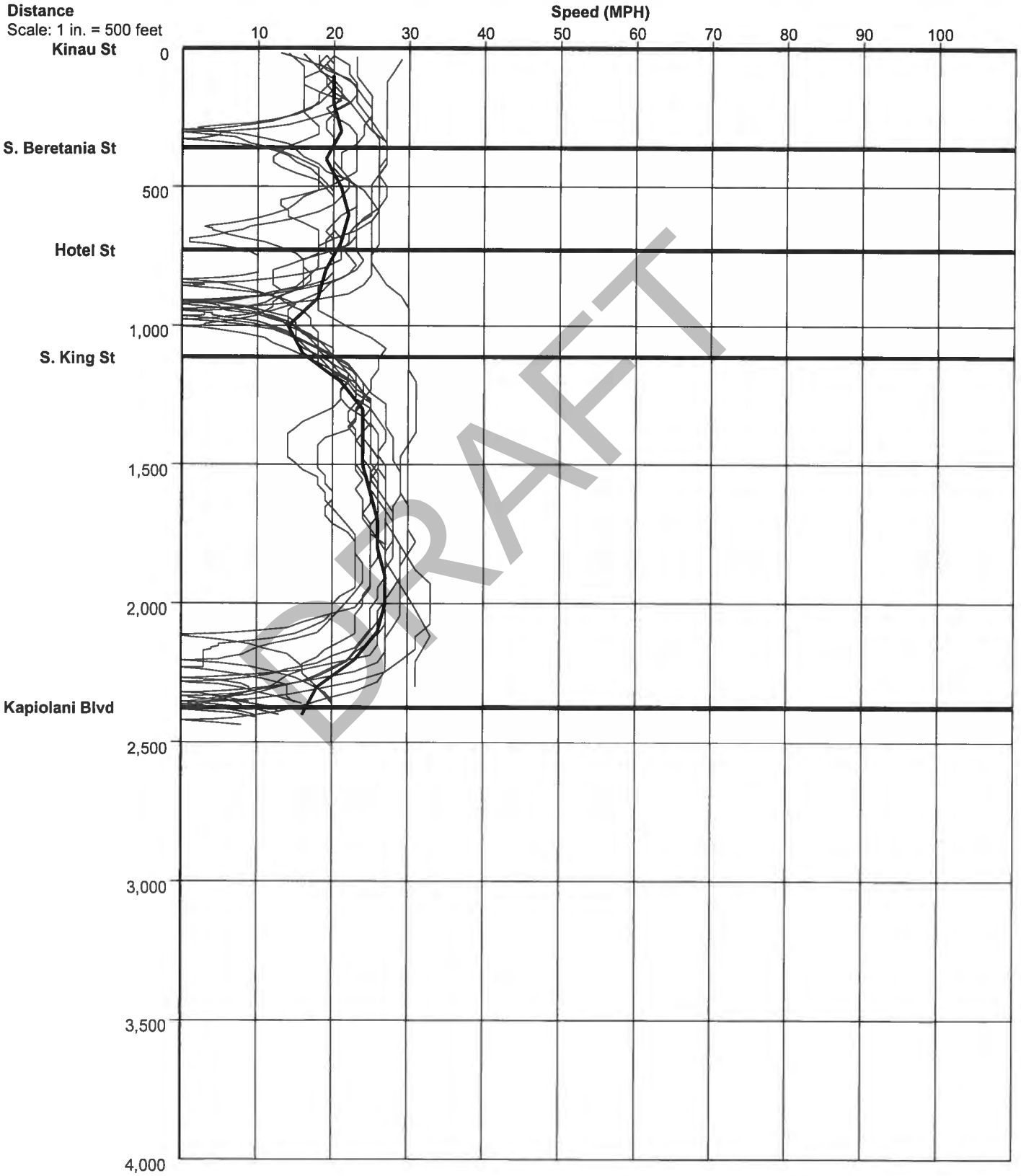
Wilson Okamoto Corporation

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



Contraflow - Ward Avenue Southbound PM

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	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
Number of Stops														
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
Average Speed														
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
Total Delay														
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
Time Less Than 0 MPH														
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

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Contraflow - Ward Avenue Southbound PM

Time Less Than 35 MPH														
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	88	39	46	94	64	34	53	79	78	30	101	62
Total	2373		183	129	147	186	154	121	145	174	232	111	192	151
Time Less Than 55 MPH														
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	88	39	46	94	64	34	53	79	78	30	101	62
Total	2373		183	129	147	186	154	121	145	174	232	111	192	151
Travel Time (min)														
1	0	Kinau Street												
2	359	S. Beretania Street	1.25	0.18	0.27	0.20	0.22	0.17	0.18	1.15	1.00	0.18	0.22	0.22
3	367	Hotel Street	0.18	0.17	0.23	0.17	0.18	0.17	0.48	0.23	0.38	0.17	0.20	0.23
4	385	S. King Street	0.15	1.15	1.18	1.17	1.10	1.12	0.87	0.20	1.18	1.00	1.10	1.03
5	1262	Kapiolani Boulevard	1.42	0.65	0.78	1.57	1.07	0.57	0.90	1.33	1.30	0.52	1.70	1.05
Total	2373		3.00	2.15	2.47	3.10	2.57	2.02	2.43	2.92	3.87	1.87	3.22	2.53

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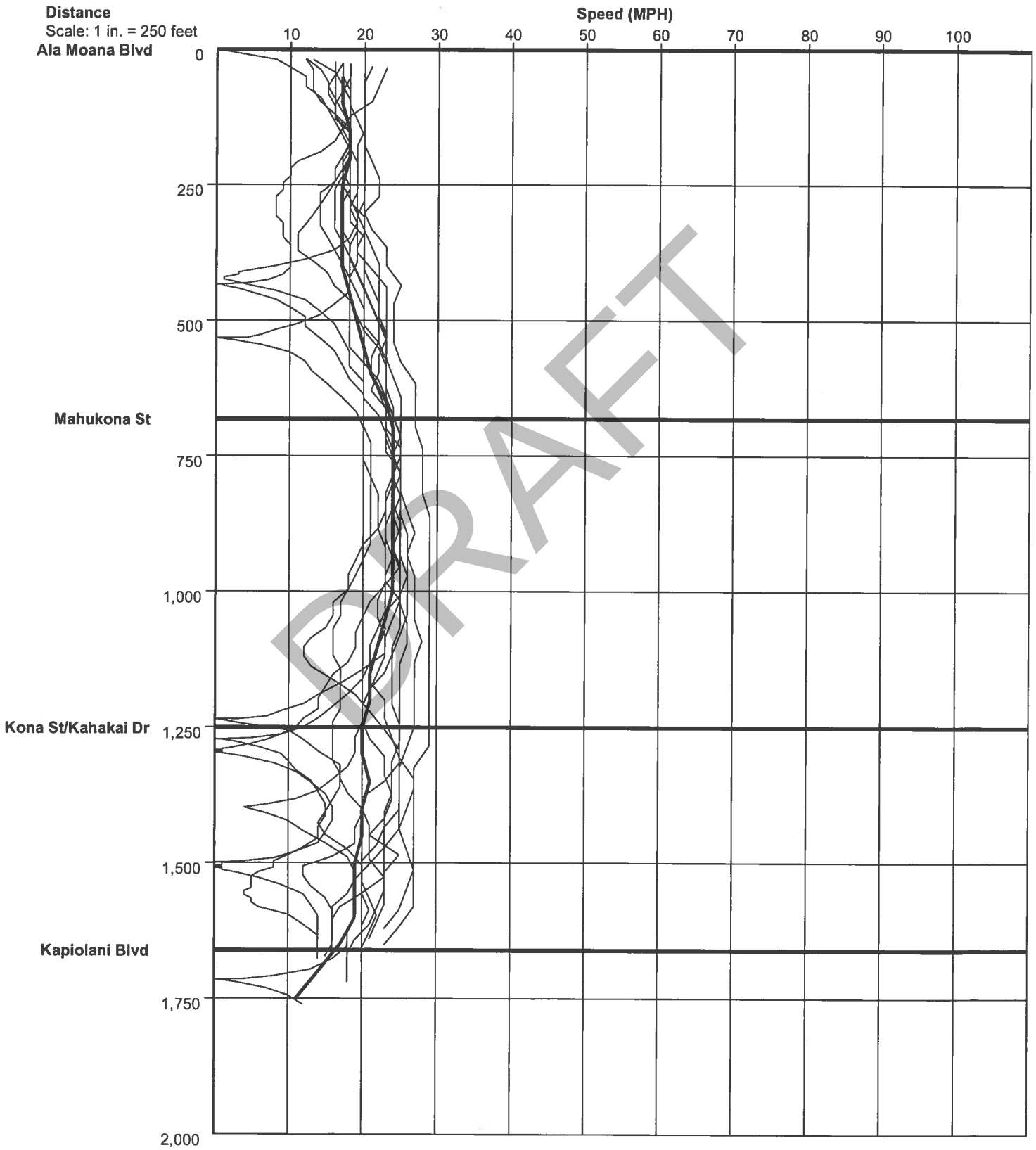
Wilson Okamoto Corporation

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



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Contraflow - Atkinson Drive 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
Travel Time														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	78	23	37	28	56	21	27	25	25	23	47	25
3	569	Kona Street/Kahakai Drive	16	17	16	17	21	14	16	20	19	18	30	14
4	410	Kapiolani Boulevard	12	19	12	11	12	13	16	16	81	73	14	11
Total	1660		106	59	65	56	89	48	59	61	125	114	91	50
Number of Stops														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	0	0	1	0	1	0	0	0	0	0	1	0
3	569	Kona Street/Kahakai Drive	0	0	0	0	0	0	0	0	0	0	1	0
4	410	Kapiolani Boulevard	0	1	0	0	0	0	0	0	2	2	0	0
Total	1660		0	1	1	0	1	0	0	0	2	2	2	0
Average Speed														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	6.1	20.7	13	16.6	8.5	22.6	18	19.4	19	20.6	10.1	19.4
3	569	Kona Street/Kahakai Drive	24.9	22.6	24	23.5	18.1	28.8	24.5	18.7	19.8	20.9	12.6	26.3
4	410	Kapiolani Boulevard	22.2	14.7	22.7	26.2	22.4	20.4	17.2	17.9	3.7	3.9	18.2	25.3
Total	1660		10.8	19.3	17.4	20.5	12.5	23.8	19.6	18.8	9.2	10	12.1	22.6
Total Delay														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	66	11	25	16	44	9	15	13	13	11	35	13
3	569	Kona Street/Kahakai Drive	6	7	6	7	11	4	6	10	9	8	20	4
4	410	Kapiolani Boulevard	5	12	5	4	5	6	9	9	74	66	8	4
Total	1660		77	30	36	27	60	19	30	32	96	85	63	21
Time Less Than 0 MPH														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	50	0	0	0	12	0	0	0	0	0	15	0
3	569	Kona Street/Kahakai Drive	0	0	0	0	0	0	0	0	0	0	7	0
4	410	Kapiolani Boulevard	0	0	0	0	0	0	0	0	32	39	0	0
Total	1660		50	0	0	0	12	0	0	0	32	39	22	0
Time Less Than 35 MPH														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	78	23	37	28	56	21	27	25	25	23	47	25
3	569	Kona Street/Kahakai Drive	16	17	16	16	21	14	16	20	19	18	30	14
4	410	Kapiolani Boulevard	12	19	11	11	11	13	15	15	81	72	13	10
Total	1660		106	59	64	55	88	48	58	60	125	113	90	49

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Contraflow - Atkinson Drive Northbound AM

Time Less Than 55 MPH														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	78	23	37	28	56	21	27	25	25	23	47	25
3	569	Kona Street/Kahakai Drive	16	17	16	17	21	14	16	20	19	18	30	14
4	410	Kapiolani Boulevard	12	19	11	10	11	13	15	15	81	72	13	10
Total	1660		106	59	64	55	88	48	58	60	125	113	90	49
Travel Time (min)														
1	0	Ala Moana Boulevard												
2	681	Mahukona Street	1.30	0.38	0.62	0.47	0.93	0.35	0.45	0.42	0.42	0.38	0.78	0.42
3	569	Kona Street/Kahakai Drive	0.27	0.28	0.27	0.28	0.35	0.23	0.27	0.33	0.32	0.30	0.50	0.23
4	410	Kapiolani Boulevard	0.20	0.32	0.20	0.18	0.20	0.22	0.27	0.27	1.35	1.22	0.23	0.18
Total	1660		1.77	0.98	1.08	0.93	1.48	0.80	0.98	1.02	2.08	1.90	1.52	0.83

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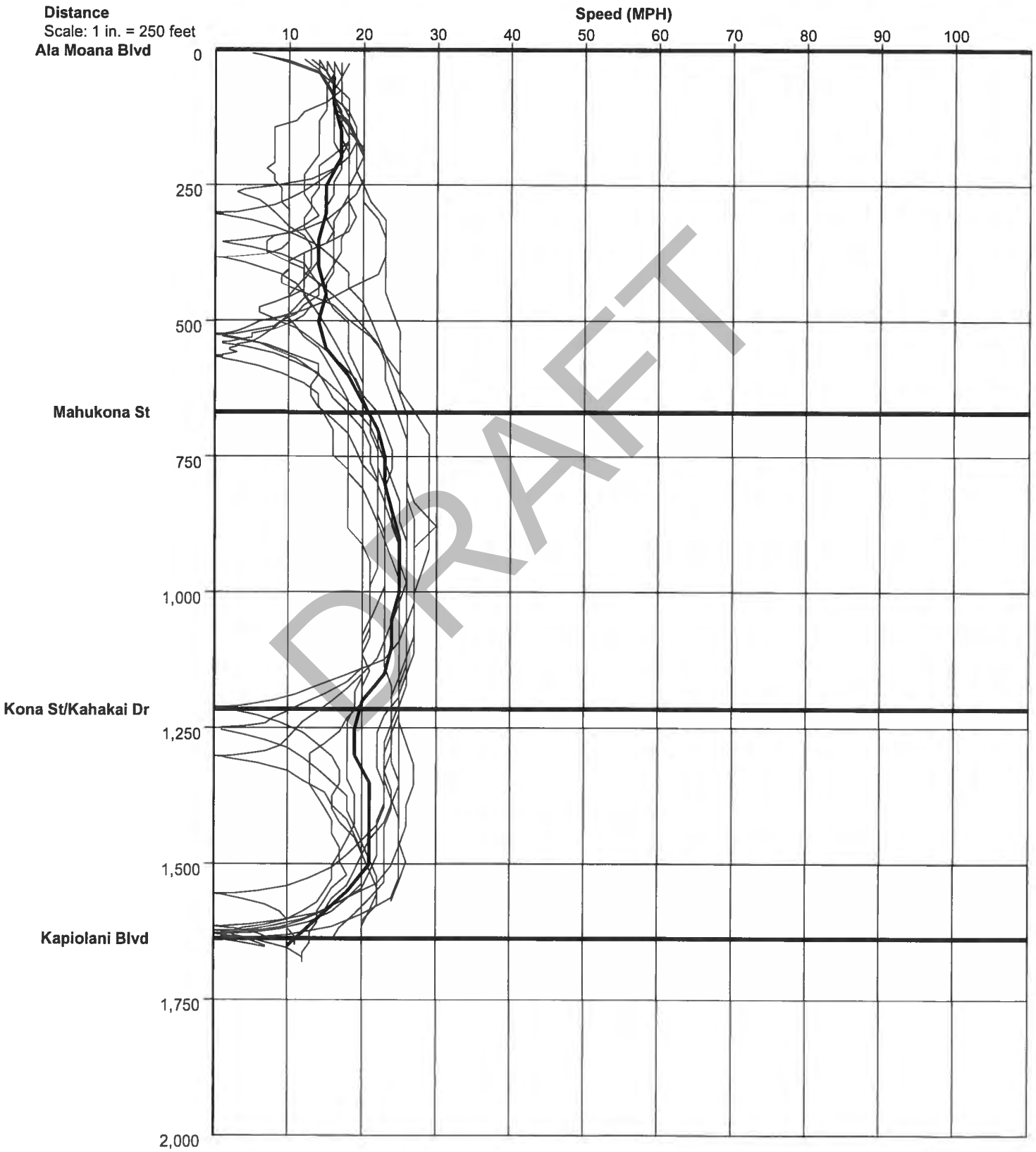
Wilson Okamoto Corporation

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



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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
Travel Time														
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
Number of Stops														
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
Average Speed														
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
Total Delay														
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
Time Less Than 0 MPH														
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
Time Less Than 35 MPH														
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

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Contraflow - Atkinson Drive Northbound PM

Time Less Than 55 MPH														
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
Travel Time (min)														
1	0	Ala Moana Boulevard												
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

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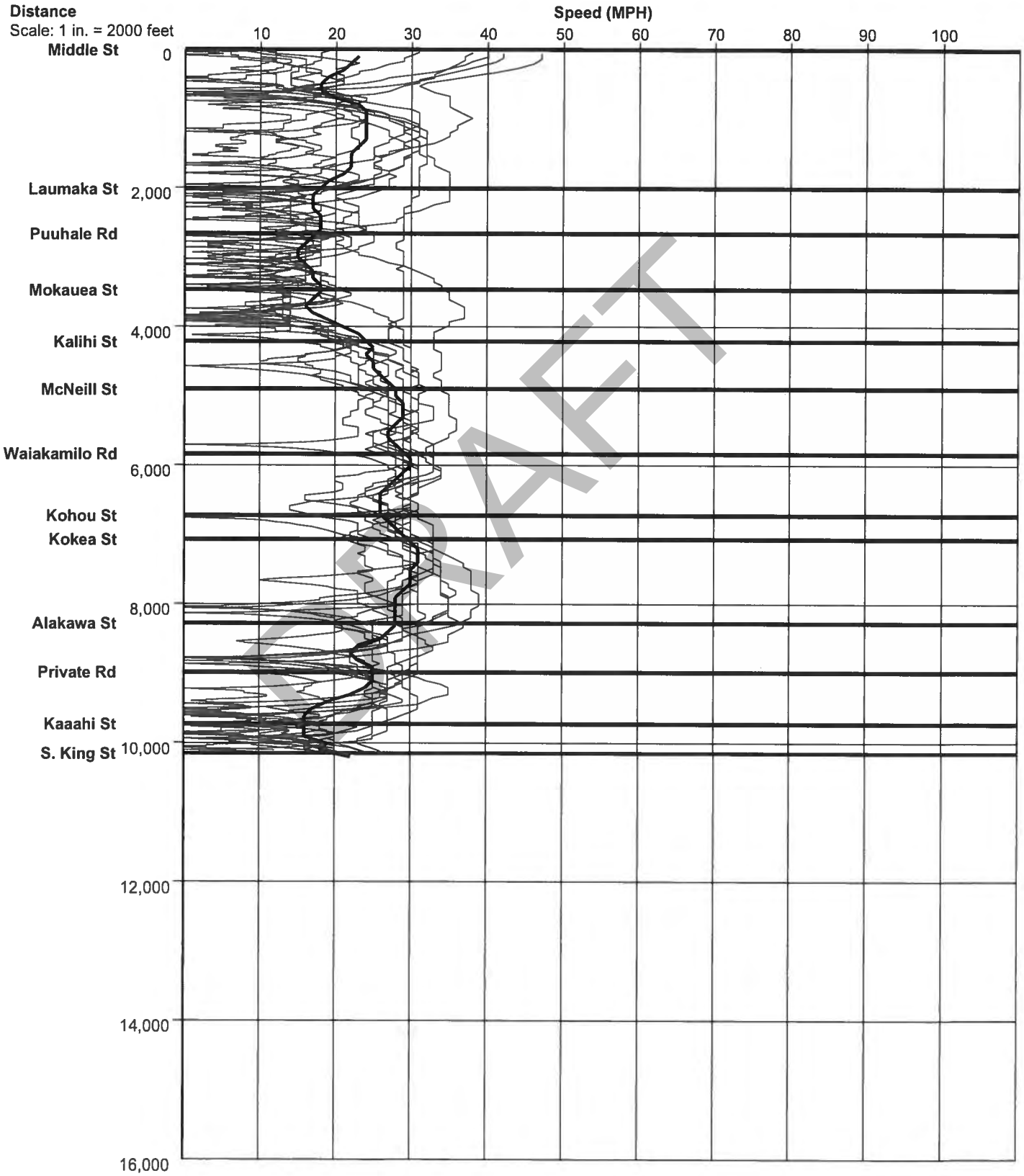
Wilson Okamoto Corporation

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
Travel Time														
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	18	16	27	47	25	19	17
7	936	Waiakamilo Road	22	18	21	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
Number of Stops														
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	1	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
Average Speed														
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	29.9	9.7	25.8	9	37	21.9	31.5	29	34
11	704	Private Road	9.1	29.9	17.4	31.2	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

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Contraflow - Dillingham Boulevard Eastbound AM

Total Delay														
1	0	Middle Street												
2	2003	Laumaka Street	30	43	38	70	92	80	189	72	85	94	120	9
3	652	Puuhale Road	4	4	10	20	84	32	26	25	16	27	73	34
4	808	Mokauea Street	5	7	67	40	25	27	93	26	41	83	50	53
5	745	Kalihi Street	5	1	26	65	38	73	9	75	72	30	61	21
6	685	McNeill Street	4	2	6	8	8	6	4	15	35	13	7	5
7	936	Waiakamilo Road	6	2	5	6	7	6	6	8	8	52	8	5
8	888	Kohou Street	5	5	6	6	5	4	7	5	6	12	12	7
9	340	Kokea Street	2	2	2	3	2	2	3	1	55	4	3	2
10	1212	Alakawa Street	8	3	56	7	63	11	71	1	17	6	8	3
11	704	Private Road	42	4	16	3	5	49	15	32	4	7	38	20
12	746	Kaaahi Street	7	5	6	9	77	13	113	46	19	11	193	13
13	422	South King Street	4	19	138	39	8	12	13	42	101	109	144	66
Total	10141		122	97	376	276	414	315	549	348	459	448	717	238
Time Less Than 0 MPH														
1	0	Middle Street												
2	2003	Laumaka Street	7	20	0	43	15	27	71	36	38	16	7	0
3	652	Puuhale Road	0	0	0	0	47	2	0	2	0	0	23	2
4	808	Mokauea Street	0	0	17	0	0	0	41	38	8	21	6	26
5	745	Kalihi Street	0	0	0	33	10	40	0	0	32	0	34	0
6	685	McNeill Street	0	0	0	0	0	0	0	0	9	0	0	0
7	936	Waiakamilo Road	0	0	0	0	0	0	0	0	0	33	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	42	0	0	0
10	1212	Alakawa Street	0	0	33	0	47	0	54	0	0	0	0	0
11	704	Private Road	25	0	0	0	0	21	1	16	0	0	22	5
12	746	Kaaahi Street	0	0	0	0	55	0	72	6	0	0	126	0
13	422	South King Street	0	0	124	17	0	0	0	14	71	70	117	50
Total	10141		32	20	174	93	174	90	239	112	200	140	335	83
Time Less Than 35 MPH														
1	0	Middle Street												
2	2003	Laumaka Street	59	68	72	99	126	114	223	106	120	128	154	26
3	652	Puuhale Road	15	13	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	6	39	78	51	86	22	88	85	43	74	34
6	685	McNeill Street	16	14	18	20	20	18	16	27	47	25	19	17
7	936	Waiakamilo Road	22	10	21	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	3	38	22	29	20
11	704	Private Road	54	16	28	15	18	62	27	44	16	19	50	29
12	746	Kaaahi Street	20	18	19	22	90	26	126	59	32	24	206	26
13	422	South King Street	11	25	145	45	15	19	21	50	108	115	150	73
Total	10141		291	245	551	444	591	490	724	505	634	617	890	390

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Contraflow - Dillingham Boulevard Eastbound AM

Time Less Than 55 MPH														
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	18	16	27	47	25	19	17
7	936	Waiakamilo Road	22	18	21	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	25	145	45	15	19	21	50	108	115	150	73
Total	10141		296	273	551	449	591	490	724	524	634	622	890	414

Travel Time (min)														
1	0	Middle Street												
2	2003	Laumaka Street	1.07	1.30	1.20	1.73	2.10	1.90	3.72	1.77	2.00	2.13	2.57	0.72
3	652	Puuhale Road	0.25	0.25	0.35	0.52	1.58	0.72	0.62	0.60	0.45	0.63	1.40	0.77
4	808	Mokauea Street	0.32	0.37	1.35	0.90	0.65	0.68	1.78	0.67	0.92	1.62	1.07	1.12
5	745	Kalihi Street	0.30	0.23	0.65	1.30	0.85	1.43	0.37	1.47	1.42	0.72	1.23	0.57
6	685	McNeill Street	0.27	0.23	0.30	0.33	0.33	0.30	0.27	0.45	0.78	0.42	0.32	0.28
7	936	Waiakamilo Road	0.37	0.30	0.35	0.37	0.40	0.37	0.37	0.40	0.40	1.13	0.40	0.35
8	888	Kohou Street	0.33	0.35	0.37	0.35	0.33	0.32	0.37	0.33	0.35	0.47	0.45	0.38
9	340	Kokea Street	0.13	0.13	0.13	0.15	0.15	0.13	0.15	0.13	1.02	0.17	0.15	0.13
10	1212	Alakawa Street	0.48	0.40	1.28	0.47	1.40	0.53	1.53	0.37	0.63	0.45	0.48	0.40
11	704	Private Road	0.90	0.27	0.47	0.25	0.30	1.03	0.45	0.73	0.27	0.32	0.83	0.53
12	746	Kaaahi Street	0.33	0.30	0.32	0.37	1.50	0.43	2.10	0.98	0.53	0.40	3.43	0.43
13	422	South King Street	0.18	0.43	2.42	0.77	0.27	0.32	0.35	0.83	1.82	1.93	2.52	1.22
Total	10141		4.93	4.57	9.18	7.50	9.87	8.17	12.07	8.73	10.58	10.38	14.85	6.90

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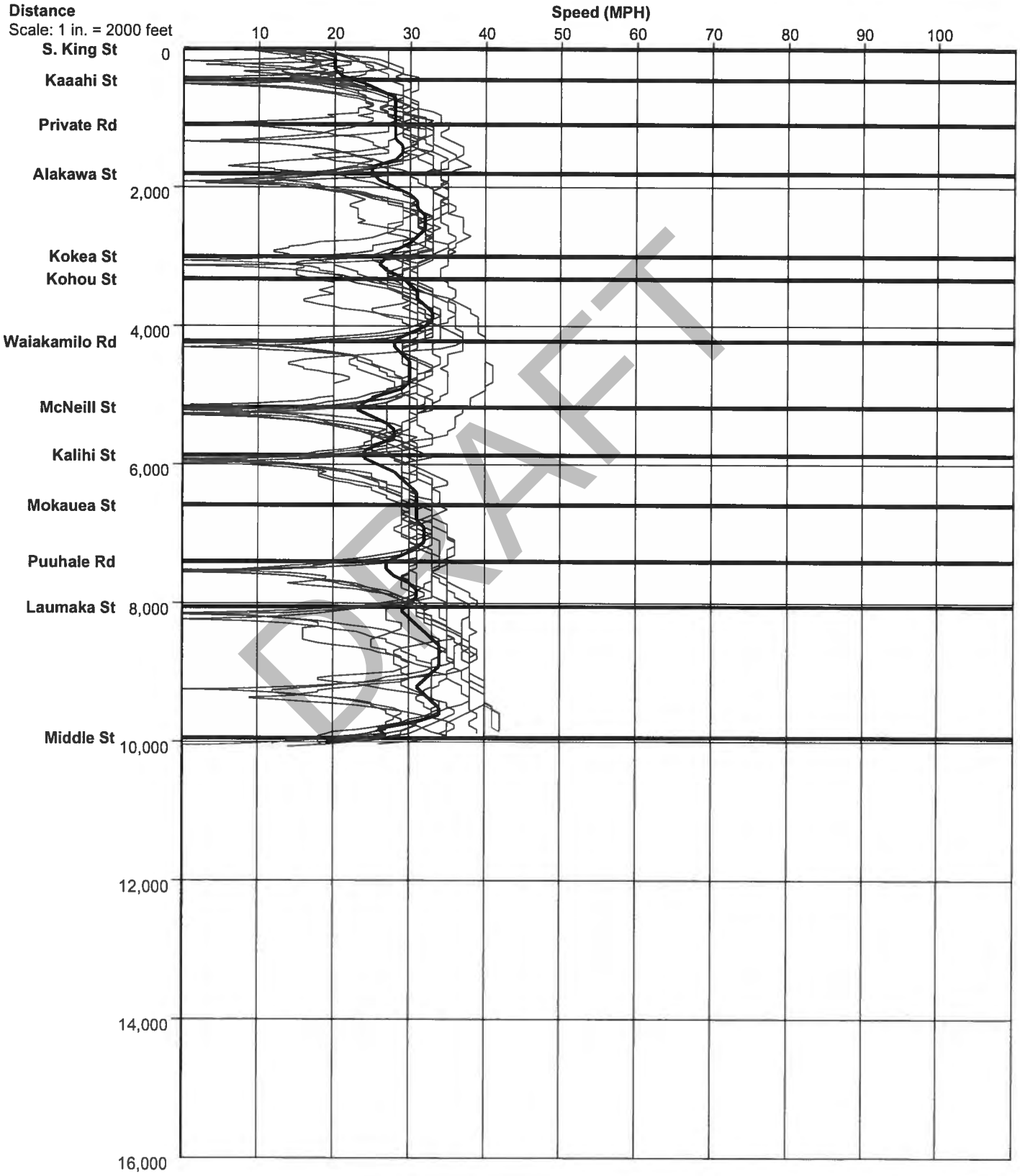
Wilson Okamoto Corporation

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



Contraflow - Dillingham Boulevard Westbound 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
Travel Time														
1	0	South King Street												
2	446	Kaaahi Street	15	11	14	38	14	37	34	19	15	20	31	23
3	642	Private Road	14	15	29	15	15	16	28	17	17	17	18	35
4	712	Alakawa Street	16	16	28	14	49	18	30	21	16	17	16	14
5	1193	Kokea Street	23	33	26	35	24	43	29	36	26	73	23	24
6	327	Kohou Street	7	8	7	8	8	11	8	14	49	8	6	51
7	896	Waiakamilo Road	20	20	19	18	22	20	21	25	20	19	20	18
8	954	McNeill Street	39	24	22	19	22	23	58	42	21	25	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	17	56	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
Number of Stops														
1	0	South King Street												
2	446	Kaaahi Street	0	0	0	0	0	1	1	0	0	0	0	1
3	642	Private Road	0	0	1	0	0	0	1	0	0	0	0	1
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	0	1	1	0	1	0	1	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
Average Speed														
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

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Contraflow - Dillingham Boulevard Westbound AM

Total Delay														
1	0	South King Street												
2	446	Kaaahi Street	7	3	6	30	6	29	26	11	7	12	23	15
3	642	Private Road	3	3	18	4	4	5	17	5	6	6	7	23
4	712	Alakawa Street	3	4	16	2	36	6	18	9	3	4	3	1
5	1193	Kokea Street	2	13	6	14	4	22	9	15	6	52	2	3
6	327	Kohou Street	1	2	1	2	2	5	2	8	43	2	0	45
7	896	Waiakamilo Road	4	4	3	2	6	4	6	10	4	3	4	2
8	954	McNeill Street	22	7	5	2	5	6	41	26	4	8	47	0
9	688	Kalihi Street	3	33	19	6	16	37	3	17	5	21	7	3
10	718	Mokauea Street	2	3	4	26	4	4	43	3	30	3	65	41
11	814	Puuhale Road	4	3	5	4	3	5	2	5	3	1	4	3
12	653	Laumaka Street	27	3	40	0	4	48	1	36	2	3	2	3
13	1893	Middle Street	0	39	1	12	18	3	35	3	8	34	9	18
Total	9936		78	117	124	104	108	174	203	148	121	149	173	157
Time Less Than 0 MPH														
1	0	South King Street												
2	446	Kaaahi Street	0	0	0	15	0	9	6	0	0	0	11	0
3	642	Private Road	0	0	0	0	0	0	0	0	0	0	0	11
4	712	Alakawa Street	0	0	0	0	21	0	0	0	0	0	0	0
5	1193	Kokea Street	0	0	0	0	0	0	0	0	0	34	0	0
6	327	Kohou Street	0	0	0	0	0	0	0	0	27	0	0	33
7	896	Waiakamilo Road	0	0	0	0	0	0	0	0	0	0	0	0
8	954	McNeill Street	6	0	0	0	0	0	27	0	0	0	31	0
9	688	Kalihi Street	0	15	1	0	3	19	0	1	0	6	0	0
10	718	Mokauea Street	0	0	0	11	0	0	31	0	10	0	50	23
11	814	Puuhale Road	0	0	0	0	0	0	0	0	0	0	0	0
12	653	Laumaka Street	9	0	26	0	0	32	0	21	0	0	0	0
13	1893	Middle Street	0	13	0	0	1	0	17	0	0	6	0	0
Total	9936		15	28	27	26	25	60	81	22	37	46	92	67
Time Less Than 35 MPH														
1	0	South King Street												
2	446	Kaaahi Street	15	11	14	38	14	37	34	19	15	20	31	23
3	642	Private Road	14	15	29	15	15	16	28	17	17	17	18	35
4	712	Alakawa Street	16	16	28	8	49	18	30	21	16	17	16	6
5	1193	Kokea Street	15	33	26	35	24	43	29	36	26	73	8	21
6	327	Kohou Street	7	8	7	8	8	11	8	14	49	8	5	51
7	896	Waiakamilo Road	20	20	19	8	22	20	21	21	20	19	10	6
8	954	McNeill Street	39	24	22	16	22	23	58	41	21	25	63	0
9	688	Kalihi Street	15	45	31	18	28	49	15	29	17	33	19	9
10	718	Mokauea Street	15	15	17	39	17	17	56	15	42	16	77	54
11	814	Puuhale Road	18	18	19	18	17	19	10	19	17	8	19	18
12	653	Laumaka Street	39	14	52	2	15	60	8	47	13	14	13	15
13	1893	Middle Street	4	72	5	30	45	14	52	9	37	58	34	47
Total	9936		217	291	269	235	276	327	349	288	290	308	313	285

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Contraflow - Dillingham Boulevard Westbound AM

Time Less Than 55 MPH														
1	0	South King Street												
2	446	Kaaahi Street	15	11	14	38	14	37	34	19	15	20	31	23
3	642	Private Road	14	15	29	15	15	16	28	17	17	17	18	35
4	712	Alakawa Street	16	16	28	14	49	18	30	21	16	17	16	14
5	1193	Kokea Street	23	33	26	35	24	43	29	36	26	73	23	24
6	327	Kohou Street	7	8	7	8	8	11	8	14	49	8	6	51
7	896	Waiakamilo Road	20	20	19	18	22	20	21	25	20	19	20	18
8	954	McNeill Street	39	24	22	19	22	23	58	42	21	25	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	17	56	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	31	72	32	44	51	34	68	34	41	67	42	50
Total	9936		252	291	296	278	282	347	376	318	294	325	348	333

Travel Time (min)														
1	0	South King Street												
2	446	Kaaahi Street	0.25	0.18	0.23	0.63	0.23	0.62	0.57	0.32	0.25	0.33	0.52	0.38
3	642	Private Road	0.23	0.25	0.48	0.25	0.25	0.27	0.47	0.28	0.28	0.28	0.30	0.58
4	712	Alakawa Street	0.27	0.27	0.47	0.23	0.82	0.30	0.50	0.35	0.27	0.28	0.27	0.23
5	1193	Kokea Street	0.38	0.55	0.43	0.58	0.40	0.72	0.48	0.60	0.43	1.22	0.38	0.40
6	327	Kohou Street	0.12	0.13	0.12	0.13	0.13	0.18	0.13	0.23	0.82	0.13	0.10	0.85
7	896	Waiakamilo Road	0.33	0.33	0.32	0.30	0.37	0.33	0.35	0.42	0.33	0.32	0.33	0.30
8	954	McNeill Street	0.65	0.40	0.37	0.32	0.37	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	0.47	0.82	0.25	0.48	0.28	0.55	0.32	0.25
10	718	Mokauea Street	0.25	0.25	0.28	0.65	0.28	0.28	0.93	0.25	0.70	0.27	1.28	0.90
11	814	Puuhale Road	0.30	0.30	0.32	0.30	0.28	0.32	0.27	0.32	0.28	0.27	0.32	0.30
12	653	Laumaka Street	0.65	0.23	0.87	0.20	0.25	1.00	0.22	0.78	0.22	0.23	0.23	0.25
13	1893	Middle Street	0.53	1.20	0.55	0.75	0.85	0.58	1.13	0.58	0.68	1.12	0.70	0.83
Total	9936		4.22	4.85	4.95	4.65	4.70	5.80	6.27	5.32	4.90	5.42	5.80	5.55

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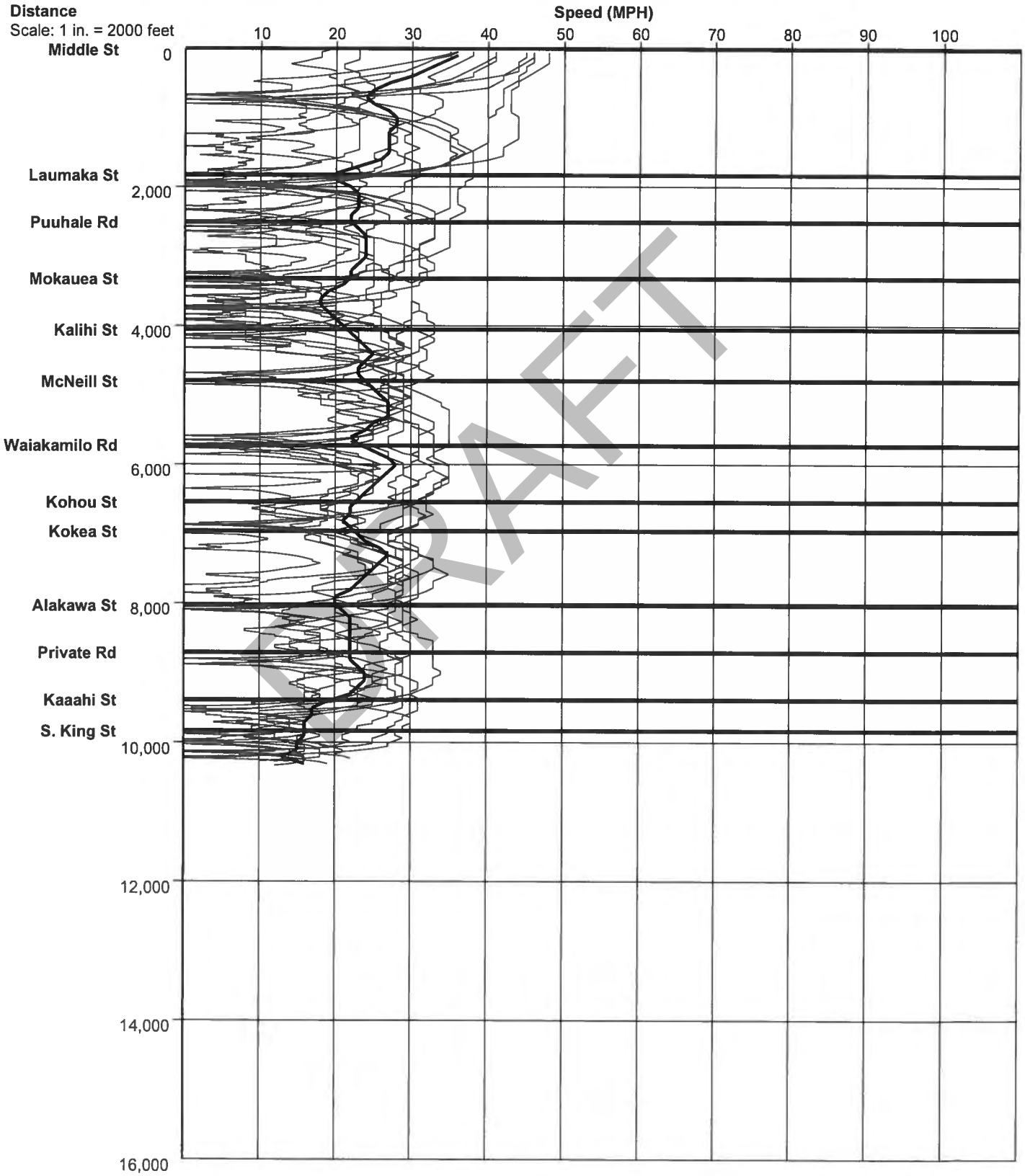
Wilson Okamoto Corporation

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



Contraflow - Dillingham Boulevard Eastbound PM

Node #	Length	Node Names	10/16/2013 3:00 PM	10/16/2013 3:15 PM	10/16/2013 3:30 PM	10/16/2013 3:45 PM	10/16/2013 4:00 PM	10/16/2013 4:15 PM	10/16/2013 4:30 PM	10/16/2013 4:45 PM	10/16/2013 5:00 PM	10/16/2013 5:15 PM	10/16/2013 5:30 PM	10/16/2013 5:45 PM
Travel Time														
1	0	Middle Street												
2	1826	Laumaka Street	72	45	65	174	133	42	67	73	32	38	66	30
3	675	Puuhale Road	52	35	52	177	73	39	48	12	48	14	38	33
4	814	Mokauea Street	24	68	17	93	75	30	22	19	19	68	25	19
5	732	Kalihi Street	137	165	53	67	38	79	60	68	20	16	20	17
6	742	McNeill Street	110	32	28	83	20	21	36	22	58	17	19	20
7	933	Waiakamilo Road	18	25	51	33	55	22	25	62	24	54	25	58
8	810	Kohou Street	17	19	124	54	27	17	19	25	18	26	52	16
9	419	Kokea Street	45	45	23	23	20	9	9	14	10	21	14	10
10	1070	Alakawa Street	26	30	130	30	26	24	18	28	36	73	36	26
11	679	Private Road	18	27	23	16	28	73	52	16	73	111	18	19
12	681	Kaaahi Street	21	71	30	17	78	22	41	14	27	52	24	18
13	443	South King Street	24	11	18	11	10	20	30	21	119	22	62	128
Total	9824		564	573	614	778	583	398	427	374	484	512	399	394
Number of Stops														
1	0	Middle Street												
2	1826	Laumaka Street	1	0	0	7	2	0	0	1	0	0	1	0
3	675	Puuhale Road	1	1	1	4	1	1	1	0	1	0	1	1
4	814	Mokauea Street	0	1	0	2	2	0	0	0	0	1	0	0
5	732	Kalihi Street	5	4	1	1	1	3	1	2	0	0	0	0
6	742	McNeill Street	2	0	0	2	0	0	1	0	1	0	0	0
7	933	Waiakamilo Road	0	0	1	0	1	0	0	1	0	1	0	1
8	810	Kohou Street	0	0	2	1	0	0	0	0	0	0	1	0
9	419	Kokea Street	1	1	0	1	1	0	0	0	0	0	0	0
10	1070	Alakawa Street	0	0	4	0	0	0	0	0	1	2	0	0
11	679	Private Road	0	0	0	0	0	1	0	0	1	1	0	0
12	681	Kaaahi Street	0	1	0	0	1	0	0	0	0	1	0	0
13	443	South King Street	1	0	0	0	0	0	0	0	1	0	1	1
Total	9824		11	8	9	18	9	5	3	4	5	6	4	3
Average Speed														
1	0	Middle Street												
2	1826	Laumaka Street	17.3	28	19.4	7.1	9.5	29.9	18.5	17.5	39.6	33	19.1	41.8
3	675	Puuhale Road	9	12.8	9	2.6	6.3	11.6	9.7	0.2	9.6	33.4	11.9	13.7
4	814	Mokauea Street	23.3	8.2	31.8	6	7.4	18.5	25.3	29.5	28.8	8.1	22.3	29.9
5	732	Kalihi Street	3.6	3	9.3	7.5	13.5	6.3	8.6	7.3	24.5	31.1	25.1	29.9
6	742	McNeill Street	4.8	16.2	18.3	6.1	25.4	24.3	13.7	23.3	9	30.1	27.4	24.7
7	933	Waiakamilo Road	33.8	26	12.4	19.5	11.4	29.6	26	10.1	27	11.5	24.6	11.2
8	810	Kohou Street	33.3	28.8	4.5	10.1	20.2	32.5	28.6	22.1	30.4	21.1	10.8	33.6
9	419	Kokea Street	6.4	6.5	12.7	12.6	14.8	31	30.7	20.9	27.6	13.7	20.7	28.9
10	1070	Alakawa Street	28	23.9	4.2	24.8	27.9	30.2	27.5	25.7	20.1	9.9	20.1	27.9
11	679	Private Road	25.2	17.7	13.2	28.1	16.8	6.4	17.2	29.5	6.3	4.2	26.3	24.7
12	681	Kaaahi Street	22	6.6	14.5	28.4	6	20.7	30.2	31.9	17.4	9.1	18.7	25.7
13	443	South King Street	12.9	27.5	6.7	25.8	2.1	15.3	14.3	14.6	2.5	13.3	4.9	2.4
Total	9824		11.9	11.7	9.8	8.6	11.5	16.9	17.2	17.9	13.9	13.1	16.8	17

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Contraflow - Dillingham Boulevard Eastbound PM

Total Delay														
1	0	Middle Street												
2	1826	Laumaka Street	41	14	33	143	102	11	36	41	0	7	34	0
3	675	Puuhale Road	40	23	40	165	61	27	36	0	36	2	26	21
4	814	Mokauea Street	10	54	3	79	61	16	8	5	5	54	11	5
5	732	Kalihi Street	124	152	40	54	25	66	47	55	8	3	7	4
6	742	McNeill Street	97	18	15	70	7	8	23	9	45	4	6	7
7	933	Waiakamilo Road	2	9	35	17	39	5	9	46	7	38	9	41
8	810	Kohou Street	3	5	110	40	13	3	5	11	4	12	38	2
9	419	Kokea Street	37	37	16	16	13	1	2	6	3	14	6	3
10	1070	Alakawa Street	7	12	117	11	8	5	6	10	18	55	17	8
11	679	Private Road	6	15	11	4	16	61	38	4	61	99	6	7
12	681	Kaaahi Street	9	59	18	5	66	10	29	2	15	40	12	6
13	443	South King Street	16	3	9	3	2	12	18	13	111	14	54	120
Total	9824		392	401	447	607	413	225	257	202	313	342	226	224

Time Less Than 0 MPH														
1	0	Middle Street												
2	1826	Laumaka Street	24	0	0	21	46	0	0	29	0	0	8	0
3	675	Puuhale Road	23	2	25	88	32	5	14	0	23	0	11	9
4	814	Mokauea Street	0	2	0	25	27	0	0	0	0	38	0	0
5	732	Kalihi Street	56	79	21	27	0	22	32	23	0	0	0	0
6	742	McNeill Street	64	0	0	36	0	0	5	0	29	0	0	0
7	933	Waiakamilo Road	0	0	10	0	19	0	0	24	0	22	0	25
8	810	Kohou Street	0	0	71	19	0	0	0	0	0	0	17	0
9	419	Kokea Street	24	25	0	0	0	0	0	0	0	0	0	0
10	1070	Alakawa Street	0	0	40	0	0	0	0	0	0	5	0	0
11	679	Private Road	0	0	0	0	0	41	0	0	37	62	0	0
12	681	Kaaahi Street	0	38	0	0	53	0	0	0	0	22	0	0
13	443	South King Street	0	0	0	0	0	0	0	0	77	0	28	80
Total	9824		191	146	167	216	177	68	51	76	166	149	64	114

Time Less Than 35 MPH														
1	0	Middle Street												
2	1826	Laumaka Street	59	37	65	173	132	37	67	51	6	25	65	4
3	675	Puuhale Road	52	35	52	177	73	39	48	1	48	8	38	33
4	814	Mokauea Street	24	68	17	93	75	30	22	16	19	68	25	19
5	732	Kalihi Street	137	165	53	67	38	79	60	68	20	16	20	17
6	742	McNeill Street	110	31	28	83	20	21	36	22	58	17	19	20
7	933	Waiakamilo Road	13	25	51	33	55	22	25	62	24	54	25	58
8	810	Kohou Street	17	19	124	54	27	17	19	25	18	26	52	16
9	419	Kokea Street	45	45	23	23	20	9	9	14	10	21	14	10
10	1070	Alakawa Street	26	30	129	30	26	24	17	28	36	73	36	26
11	679	Private Road	18	27	23	16	28	73	52	16	73	111	18	19
12	681	Kaaahi Street	21	71	30	17	78	22	41	14	27	52	24	18
13	443	South King Street	24	11	18	11	10	20	30	21	119	22	62	128
Total	9824		546	564	613	777	582	393	426	338	458	493	398	368

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Contraflow - Dillingham Boulevard Eastbound PM

Time Less Than 55 MPH														
1	0	Middle Street												
2	1826	Laumaka Street	72	45	65	174	133	42	67	73	32	38	66	30
3	675	Puuhale Road	52	35	52	177	73	39	48	12	48	14	38	33
4	814	Mokauea Street	24	68	17	93	75	30	22	19	19	68	25	19
5	732	Kalihi Street	137	165	53	67	38	79	60	68	20	16	20	17
6	742	McNeill Street	110	31	28	83	20	21	36	22	58	17	19	20
7	933	Waiakamilo Road	18	25	51	33	55	22	25	62	24	54	25	58
8	810	Kohou Street	17	19	124	54	27	17	19	25	18	26	52	16
9	419	Kokea Street	45	45	23	23	20	9	9	14	10	21	14	10
10	1070	Alakawa Street	26	30	129	30	26	24	17	28	36	73	36	26
11	679	Private Road	18	27	23	16	28	73	52	16	73	111	18	19
12	681	Kaaahi Street	21	71	30	17	78	22	41	14	27	52	24	18
13	443	South King Street	24	11	18	11	10	20	30	21	119	22	62	128
Total	9824		564	572	613	778	583	398	426	374	484	512	399	394

Travel Time (min)														
1	0	Middle Street												
2	1826	Laumaka Street	1.20	0.75	1.08	2.90	2.22	0.70	1.12	1.22	0.53	0.63	1.10	0.50
3	675	Puuhale Road	0.87	0.58	0.87	2.95	1.22	0.65	0.80	0.20	0.80	0.23	0.63	0.55
4	814	Mokauea Street	0.40	1.13	0.28	1.55	1.25	0.50	0.37	0.32	0.32	1.13	0.42	0.32
5	732	Kalihi Street	2.28	2.75	0.88	1.12	0.63	1.32	1.00	1.13	0.33	0.27	0.33	0.28
6	742	McNeill Street	1.83	0.53	0.47	1.38	0.33	0.35	0.60	0.37	0.97	0.28	0.32	0.33
7	933	Waiakamilo Road	0.30	0.42	0.85	0.55	0.92	0.37	0.42	1.03	0.40	0.90	0.42	0.97
8	810	Kohou Street	0.28	0.32	2.07	0.90	0.45	0.28	0.32	0.42	0.30	0.43	0.87	0.27
9	419	Kokea Street	0.75	0.75	0.38	0.38	0.33	0.15	0.15	0.23	0.17	0.35	0.23	0.17
10	1070	Alakawa Street	0.43	0.50	2.17	0.50	0.43	0.40	0.30	0.47	0.60	1.22	0.60	0.43
11	679	Private Road	0.30	0.45	0.38	0.27	0.47	1.22	0.87	0.27	1.22	1.85	0.30	0.32
12	681	Kaaahi Street	0.35	1.18	0.50	0.28	1.30	0.37	0.68	0.23	0.45	0.87	0.40	0.30
13	443	South King Street	0.40	0.18	0.30	0.18	0.17	0.33	0.50	0.35	1.98	0.37	1.03	2.13
Total	9824		9.40	9.55	10.23	12.97	9.72	6.63	7.12	6.23	8.07	8.53	6.65	6.57

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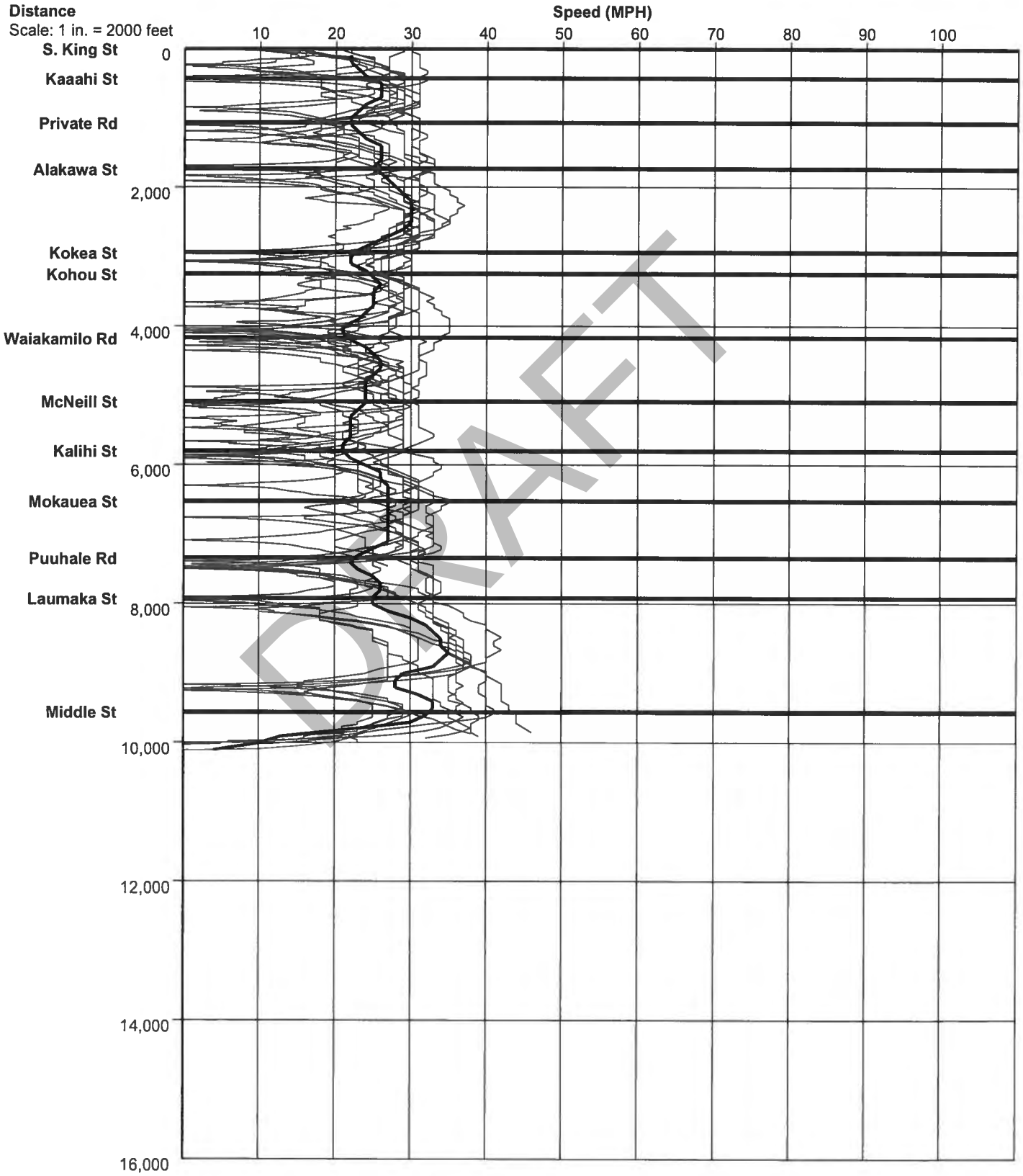
Wilson Okamoto Corporation

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

Study Name : **Dillingham WB PM**
Study Date : **1/22/2014**

Speed/Distance Profiles of All Runs



Contraflow - Dillingham Boulevard Westbound 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
Travel Time														
1	0	South King Street												
2	425	Kaaahi Street	11	14	14	21	10	42	22	12	16	14	12	45
3	640	Private Road	43	16	16	15	28	16	17	17	42	18	16	20
4	664	Alakawa Street	25	18	48	14	47	16	50	16	14	35	20	20
5	1202	Kokea Street	27	29	33	71	32	29	32	27	27	27	28	68
6	309	Kohou Street	8	49	8	9	9	47	9	43	54	7	8	12
7	922	Waiakamilo Road	57	22	31	23	48	23	41	27	20	43	50	52
8	921	McNeill Street	78	24	31	57	32	63	26	65	20	26	29	26
9	711	Kalihi Street	83	57	64	35	21	22	25	16	20	21	18	17
10	722	Mokauea Street	16	82	101	22	62	23	19	21	66	17	17	18
11	819	Puuhale Road	45	21	19	47	23	19	20	23	20	18	20	23
12	577	Laumaka Street	4	28	44	17	5	12	62	12	12	47	43	42
13	1643	Middle Street	72	57	63	58	81	89	41	30	32	50	48	62
Total	9555		469	417	472	389	398	401	364	309	343	323	309	405
Number of Stops														
1	0	South King Street												
2	425	Kaaahi Street	0	0	0	0	0	1	1	0	0	0	0	1
3	640	Private Road	1	0	0	0	1	0	0	0	1	0	0	0
4	664	Alakawa Street	0	0	1	0	1	0	1	0	0	1	0	0
5	1202	Kokea Street	0	0	0	1	0	1	0	0	0	0	0	1
6	309	Kohou Street	0	1	0	0	0	0	0	1	1	0	0	0
7	922	Waiakamilo Road	1	0	0	0	1	0	1	0	0	1	1	1
8	921	McNeill Street	2	0	1	1	1	1	0	1	0	0	0	0
9	711	Kalihi Street	2	1	2	1	0	0	0	0	0	0	0	0
10	722	Mokauea Street	0	1	1	0	2	0	0	0	1	0	0	0
11	819	Puuhale Road	1	0	0	1	0	0	0	0	0	0	0	0
12	577	Laumaka Street	0	1	1	0	0	0	2	0	0	1	1	1
13	1643	Middle Street	0	1	1	1	0	1	0	0	0	0	0	1
Total	9555		7	5	7	5	6	4	5	2	3	3	2	5
Average Speed														
1	0	South King Street												
2	425	Kaaahi Street	27.1	22.6	21.6	14.6	31.2	7.1	13.5	24.9	18.1	22.1	25.6	6.8
3	640	Private Road	10	26.1	27.1	29.6	14.9	26.8	25.5	25.7	11	23.4	26.6	21.3
4	664	Alakawa Street	18.4	25.7	9.2	31.1	10.1	29.3	9.1	29.4	31.4	13.4	23.8	22.6
5	1202	Kokea Street	30.4	28.1	25.6	11.4	25.3	27.6	25.3	29.9	30.8	30.6	28.7	12.2
6	309	Kohou Street	26.9	4.2	25.1	25.7	24	4.7	26.2	5	3.5	28.9	27.1	16.5
7	922	Waiakamilo Road	10.8	28.6	20	26.5	13.3	27.3	15.1	23.6	32.4	14.6	12.6	12.1
8	921	McNeill Street	8	25.9	20.7	11.1	19.2	10.2	23.7	9.3	31.1	24.7	21.6	24.7
9	711	Kalihi Street	6	8.5	7.4	13.9	23.6	21.3	19.4	30.9	23.8	23.1	27.3	28.4
10	722	Mokauea Street	31.5	6.2	5	22.9	7.8	21.8	26.8	23	7.3	28.9	28.8	27.6
11	819	Puuhale Road	12	25.9	28.9	11.6	24.7	29.2	27.3	25	28.6	31.2	27.9	24
12	577	Laumaka Street	26	13.7	8.8	23.5	30	32.4	6.3	32.3	32.6	8	9.3	9.4
13	1643	Middle Street	12.3	20.1	17.8	19.3	20.9	12.6	27.6	37.2	35.5	22.6	23	18.3
Total	9555		12.8	15.7	13.8	16.8	16.3	16.3	17.9	21.1	19.1	20.2	21.1	16.2

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Contraflow - Dillingham Boulevard Westbound PM

Total Delay														
1	0	South King Street												
2	425	Kaaahi Street	4	6	6	13	2	34	15	5	9	6	4	37
3	640	Private Road	32	5	5	3	17	5	6	6	31	7	5	9
4	664	Alakawa Street	13	6	37	2	35	4	38	4	2	23	8	9
5	1202	Kokea Street	6	8	12	50	11	9	11	6	6	6	7	47
6	309	Kohou Street	2	43	2	3	3	41	3	37	49	1	2	7
7	922	Waiakamilo Road	41	6	15	7	32	7	25	11	4	27	34	36
8	921	McNeill Street	62	8	15	41	16	47	10	49	4	10	13	10
9	711	Kalihi Street	71	45	52	23	9	10	13	3	8	8	6	5
10	722	Mokauea Street	3	69	88	9	50	10	6	8	54	4	4	5
11	819	Puuhale Road	31	7	5	33	9	5	6	8	6	3	6	9
12	577	Laumaka Street	1	18	34	7	1	2	52	2	2	37	33	32
13	1643	Middle Street	14	28	35	30	2	61	13	1	3	22	20	34
Total	9555		280	249	306	221	187	235	198	140	178	154	142	240
Time Less Than 0 MPH														
1	0	South King Street												
2	425	Kaaahi Street	0	0	0	0	0	8	0	0	0	0	0	9
3	640	Private Road	13	0	0	0	0	0	0	0	18	0	0	0
4	664	Alakawa Street	0	0	18	0	13	0	20	0	0	5	0	0
5	1202	Kokea Street	0	0	0	32	0	0	0	0	0	0	0	19
6	309	Kohou Street	0	30	0	0	0	31	0	22	36	0	0	0
7	922	Waiakamilo Road	12	0	0	0	6	0	10	0	0	8	16	12
8	921	McNeill Street	29	0	0	20	0	31	0	33	0	0	0	0
9	711	Kalihi Street	34	12	11	3	0	0	0	0	0	0	0	0
10	722	Mokauea Street	0	53	60	0	25	0	0	0	33	0	0	0
11	819	Puuhale Road	9	0	0	17	0	0	0	0	0	0	0	0
12	577	Laumaka Street	0	0	21	0	0	0	26	0	0	23	16	16
13	1643	Middle Street	0	4	22	6	0	41	0	0	0	0	0	18
Total	9555		97	99	132	78	44	111	56	55	87	36	32	74
Time Less Than 35 MPH														
1	0	South King Street												
2	425	Kaaahi Street	11	14	14	21	10	42	22	12	16	14	12	45
3	640	Private Road	43	16	16	15	28	16	17	17	42	18	16	20
4	664	Alakawa Street	25	18	48	14	47	16	50	16	14	35	20	20
5	1202	Kokea Street	27	29	33	71	32	21	32	27	27	27	28	68
6	309	Kohou Street	8	49	8	9	9	47	9	43	54	7	8	12
7	922	Waiakamilo Road	57	22	31	23	48	23	41	27	20	43	50	52
8	921	McNeill Street	78	24	31	57	32	63	26	65	20	26	29	26
9	711	Kalihi Street	83	57	64	35	21	22	25	16	20	21	18	17
10	722	Mokauea Street	16	82	101	22	62	23	19	21	66	17	17	18
11	819	Puuhale Road	45	21	19	47	23	19	20	23	20	18	20	23
12	577	Laumaka Street	3	28	44	17	4	12	62	12	12	47	43	42
13	1643	Middle Street	44	47	47	56	66	77	23	10	7	50	48	47
Total	9555		440	407	456	387	382	381	346	289	318	323	309	390

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Contraflow - Dillingham Boulevard Westbound PM

Time Less Than 55 MPH														
1	0	South King Street												
2	425	Kaaahi Street	11	14	14	21	10	42	22	12	16	14	12	45
3	640	Private Road	43	16	16	15	28	16	17	17	42	18	16	20
4	664	Alakawa Street	25	18	48	14	47	16	50	16	14	35	20	20
5	1202	Kokea Street	27	29	33	71	32	29	32	27	27	27	28	68
6	309	Kohou Street	8	49	8	9	9	47	9	43	54	7	8	12
7	922	Waiakamilo Road	57	22	31	23	48	23	41	27	20	43	50	52
8	921	McNeill Street	78	24	31	57	32	63	26	65	20	26	29	26
9	711	Kalihi Street	83	57	64	35	21	22	25	16	20	21	18	17
10	722	Mokauea Street	16	82	101	22	62	23	19	21	66	17	17	18
11	819	Puuhale Road	45	21	19	47	23	19	20	23	20	18	20	23
12	577	Laumaka Street	3	28	44	17	4	12	62	12	12	47	43	42
13	1643	Middle Street	72	57	63	58	81	89	41	30	32	50	48	62
Total	9555		468	417	472	389	397	401	364	309	343	323	309	405

Travel Time (min)														
1	0	South King Street												
2	425	Kaaahi Street	0.18	0.23	0.23	0.35	0.17	0.70	0.37	0.20	0.27	0.23	0.20	0.75
3	640	Private Road	0.72	0.27	0.27	0.25	0.47	0.27	0.28	0.28	0.70	0.30	0.27	0.33
4	664	Alakawa Street	0.42	0.30	0.80	0.23	0.78	0.27	0.83	0.27	0.23	0.58	0.33	0.33
5	1202	Kokea Street	0.45	0.48	0.55	1.18	0.53	0.48	0.53	0.45	0.45	0.45	0.47	1.13
6	309	Kohou Street	0.13	0.82	0.13	0.15	0.15	0.78	0.15	0.72	0.90	0.12	0.13	0.20
7	922	Waiakamilo Road	0.95	0.37	0.52	0.38	0.80	0.38	0.68	0.45	0.33	0.72	0.83	0.87
8	921	McNeill Street	1.30	0.40	0.52	0.95	0.53	1.05	0.43	1.08	0.33	0.43	0.48	0.43
9	711	Kalihi Street	1.38	0.95	1.07	0.58	0.35	0.37	0.42	0.27	0.33	0.35	0.30	0.28
10	722	Mokauea Street	0.27	1.37	1.68	0.37	1.03	0.38	0.32	0.35	1.10	0.28	0.28	0.30
11	819	Puuhale Road	0.75	0.35	0.32	0.78	0.38	0.32	0.33	0.38	0.33	0.30	0.33	0.38
12	577	Laumaka Street	0.07	0.47	0.73	0.28	0.08	0.20	1.03	0.20	0.20	0.78	0.72	0.70
13	1643	Middle Street	1.20	0.95	1.05	0.97	1.35	1.48	0.68	0.50	0.53	0.83	0.80	1.03
Total	9555		7.82	6.95	7.87	6.48	6.63	6.68	6.07	5.15	5.72	5.38	5.15	6.75

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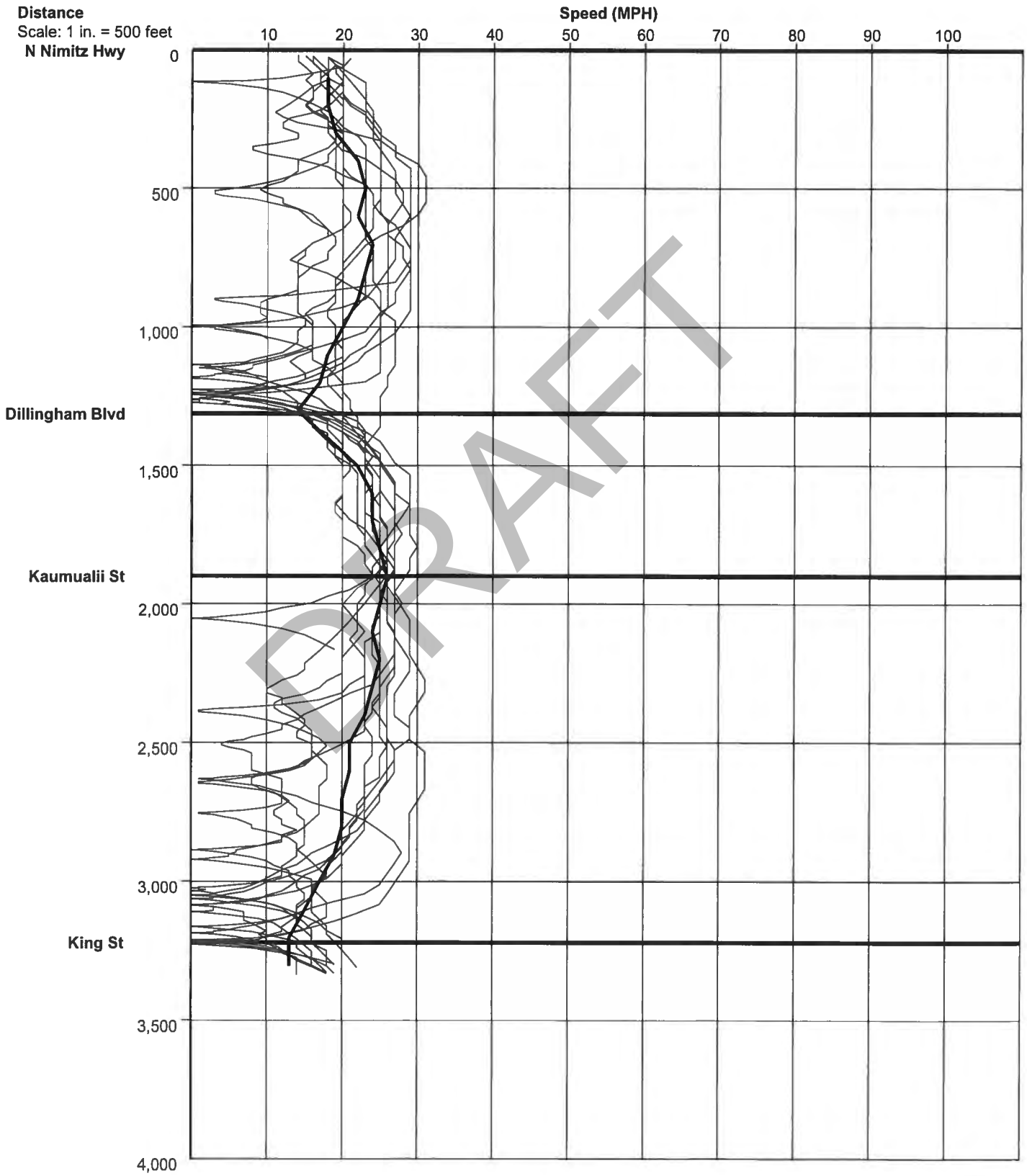
Wilson Okamoto Corporation

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



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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
Travel Time														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	116	67	124	90	124	110	50	110	94	44	85	143
3	587	Kaumualii 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
Number of Stops														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	1	2	1	3	1	1	0	1	2	0	3	1
3	587	Kaumualii 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
Average Speed														
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	Kaumualii 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
Total Delay														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	93	93	102	67	101	87	27	88	71	21	62	121
3	587	Kaumualii 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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Contraflow - Kalihi Street Northbound AM

Time Less Than 0 MPH														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	68	0	67	14	76	61	0	57	32	0	6	95
3	587	Kaumualii Street	0	0	0	0	0	0	0	0	0	0	0	0
4	1319	King Street	83	58	22	114	45	45	99	133	101	109	54	0
Total	3217		151	58	89	128	121	106	99	190	133	109	60	95
Time Less Than 35 MPH														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	116	67	124	90	124	110	50	110	94	44	85	143
3	587	Kaumualii Street	17	17	20	15	16	20	17	19	16	18	16	15
4	1319	King Street	128	110	70	190	62	97	165	195	182	164	109	37
Total	3217		261	194	214	295	202	227	232	324	292	226	210	195
Time Less Than 55 MPH														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	116	67	124	90	124	110	50	110	94	44	85	143
3	587	Kaumualii Street	17	17	20	15	16	20	17	19	16	18	16	15
4	1319	King Street	128	110	70	190	62	97	165	195	182	164	109	37
Total	3217		261	194	214	295	202	227	232	324	292	226	210	195
Travel Time (min)														
1	0	N. Nimitz Highway												
2	1311	Dillingham Boulevard	1.93	1.12	2.07	1.50	2.07	1.83	0.83	1.83	1.57	0.73	1.42	2.38
3	587	Kaumualii Street	0.28	0.28	0.33	0.25	0.27	0.33	0.28	0.32	0.27	0.30	0.27	0.25
4	1319	King Street	2.13	1.83	1.17	3.17	1.05	1.62	2.75	3.25	3.03	2.73	1.82	0.62
Total	3217		4.35	3.23	3.57	4.92	3.38	3.78	3.87	5.40	4.87	3.77	3.50	3.25

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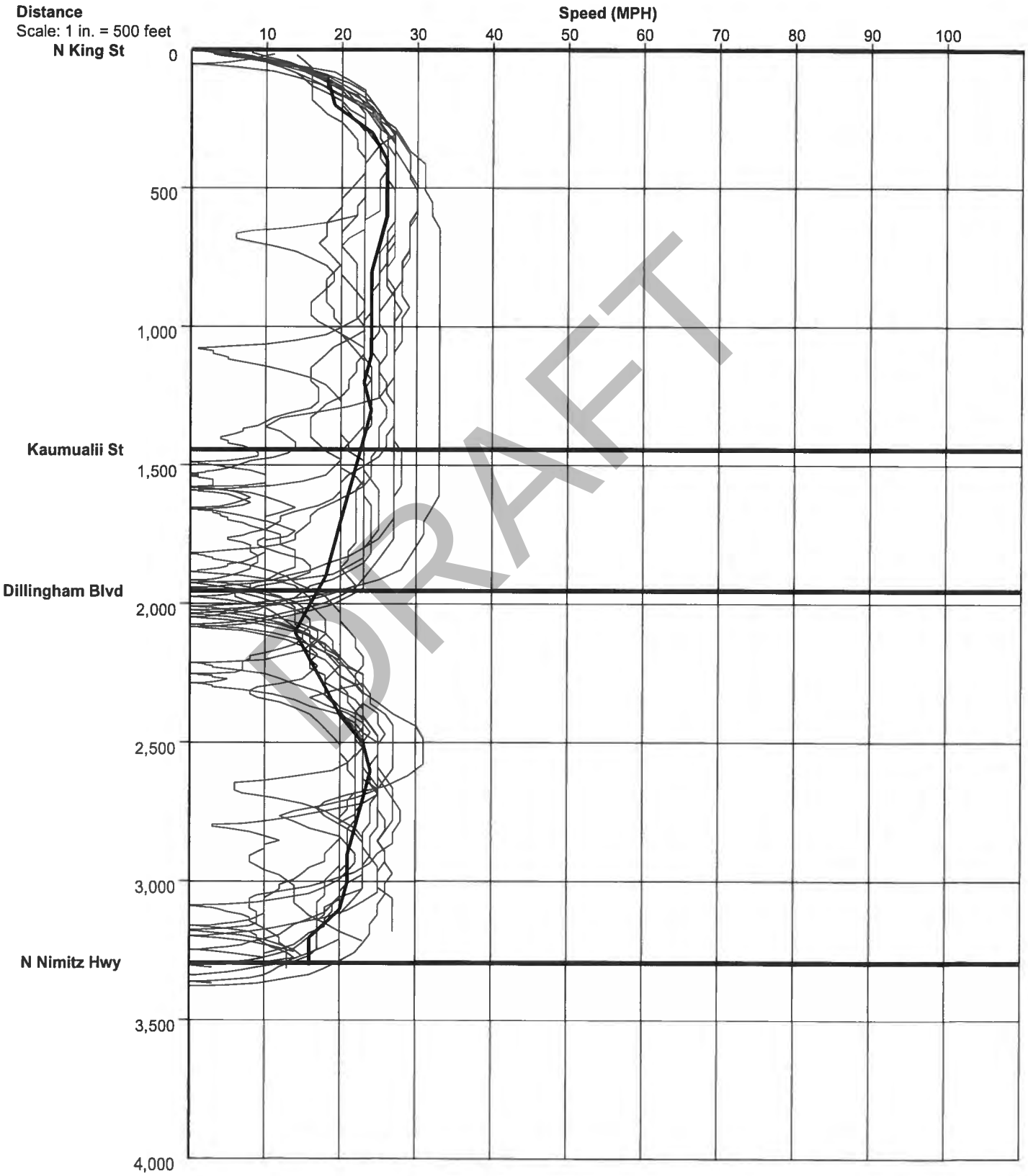
Wilson Okamoto Corporation

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



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Contraflow - Kalihi Street Southbound 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
Travel Time														
1	0	N. King Street												
2	1442	Kaumualii Street	47	52	38	44	63	57	66	75	48	44	47	51
3	509	Dillingham Boulevard	15	71	12	83	14	16	92	234	16	47	70	89
4	1340	N. Nimitz Highway	139	46	180	51	113	243	82	51	288	41	250	178
Total	3291		201	169	230	178	190	316	240	360	352	132	367	318
Number of Stops														
1	0	N. King Street												
2	1442	Kaumualii Street	0	0	0	0	1	0	1	1	0	0	0	0
3	509	Dillingham Boulevard	0	1	0	1	0	0	1	5	0	1	1	2
4	1340	N. Nimitz Highway	1	0	3	0	1	2	2	0	2	0	2	2
Total	3291		1	1	3	1	2	2	4	6	2	1	3	4
Average Speed														
1	0	N. King Street												
2	1442	Kaumualii Street	21.2	19.3	26.3	22.5	15.7	17.3	15	13.2	20.6	22.9	21.1	19.3
3	509	Dillingham Boulevard	22.7	4.7	28.6	4.1	25.4	21.5	3.7	1.5	21.6	7.3	4.9	3.8
4	1340	N. Nimitz Highway	6.6	18.4	4.9	17.8	8.1	3.7	10.6	17.8	3.2	21.9	3.5	5.2
Total	3291		11.2	12.9	9.7	12.6	11.9	7.1	9.2	6.2	6.4	17	6.1	7.1
Total Delay														
1	0	N. King Street												
2	1442	Kaumualii Street	22	27	13	19	38	32	41	50	23	19	22	26
3	509	Dillingham Boulevard	6	62	3	74	5	7	83	225	7	38	61	80
4	1340	N. Nimitz Highway	116	24	157	28	90	220	60	28	265	18	227	155
Total	3291		144	113	173	121	133	259	184	303	295	75	310	261

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Contraflow - Kalihi Street Southbound AM

Time Less Than 0 MPH														
1	0	N. King Street												
2	1442	Kaumualii Street	0	5	0	0	19	1	0	13	0	0	0	0
3	509	Dillingham Boulevard	0	35	0	62	0	0	70	170	0	13	10	45
4	1340	N. Nimitz Highway	87	0	105	0	65	181	5	0	221	0	191	101
Total	3291		87	40	105	62	84	182	75	183	221	13	201	146
Time Less Than 35 MPH														
1	0	N. King Street												
2	1442	Kaumualii Street	47	52	38	44	63	57	66	75	48	44	47	51
3	509	Dillingham Boulevard	15	71	12	83	14	16	92	234	16	47	70	89
4	1340	N. Nimitz Highway	139	45	179	51	113	242	81	51	288	41	249	178
Total	3291		201	168	229	178	190	315	239	360	352	132	366	318
Time Less Than 55 MPH														
1	0	N. King Street												
2	1442	Kaumualii Street	47	52	38	44	63	57	66	75	48	44	47	51
3	509	Dillingham Boulevard	15	71	12	83	14	16	92	234	16	47	70	89
4	1340	N. Nimitz Highway	139	45	179	51	113	242	81	51	288	41	249	178
Total	3291		201	168	229	178	190	315	239	360	352	132	366	318
Travel Time (min)														
1	0	N. King Street												
2	1442	Kaumualii Street	0.78	0.87	0.63	0.73	1.05	0.95	1.10	1.25	0.80	0.73	0.78	0.85
3	509	Dillingham Boulevard	0.25	1.18	0.20	1.38	0.23	0.27	1.53	3.90	0.27	0.78	1.17	1.48
4	1340	N. Nimitz Highway	2.32	0.77	3.00	0.85	1.88	4.05	1.37	0.85	4.80	0.68	4.17	2.97
Total	3291		3.35	2.82	3.83	2.97	3.17	5.27	4.00	6.00	5.87	2.20	6.12	5.30

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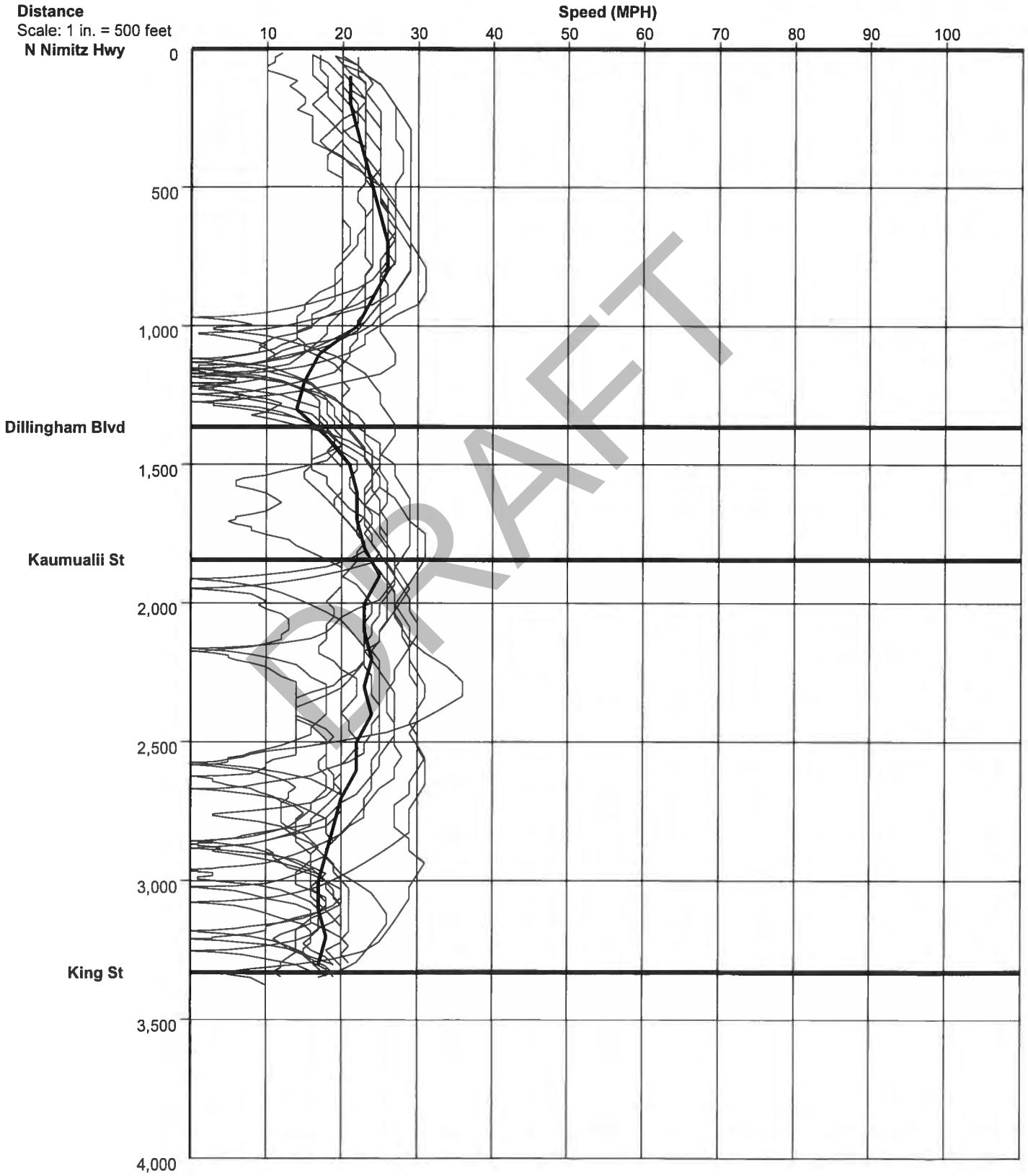
Wilson Okamoto Corporation

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 - Kalihi 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
Travel Time														
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
Number of Stops														
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
Average Speed														
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
Total Delay														
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

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Contraflow - Kalihi Street Northbound PM

Time Less Than 0 MPH														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	7	0	55	1	22	26	77	5	20	77	5	43
3	479	Kaumualii Street	0	0	0	0	0	0	0	0	0	0	0	0
4	1485	King St	3	47	22	305	162	64	99	210	61	53	0	0
Total	3327		10	47	77	306	184	90	176	215	81	130	5	43
Time Less Than 35 MPH														
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	66	108	81	404	223	128	153	296	132	104	38	54
Total	3327		145	165	217	469	320	230	293	367	241	247	121	167
Time Less Than 55 MPH														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	64	44	123	52	84	85	126	7	80	127	66	101
3	479	Kaumualii Street	15	13	13	13	13	17	14	14	29	16	17	12
4	1485	King St	66	108	81	404	225	128	153	296	132	104	38	54
Total	3327		145	165	217	469	322	230	293	317	241	247	121	167
Travel Time (min)														
1	0	N. Nimitz Highway												
2	1363	Dillingham Boulevard	1.07	0.73	2.05	0.87	1.40	1.42	2.10	0.95	1.33	2.12	1.10	1.68
3	479	Kaumualii Street	0.25	0.22	0.22	0.22	0.22	0.28	0.23	0.23	0.48	0.27	0.28	0.20
4	1485	King St	1.12	1.82	1.37	6.75	3.77	2.13	0.25	4.93	2.20	1.73	0.63	0.90
Total	3327		2.43	2.77	3.63	7.83	5.38	3.83	2.58	6.12	4.02	4.12	2.02	2.78

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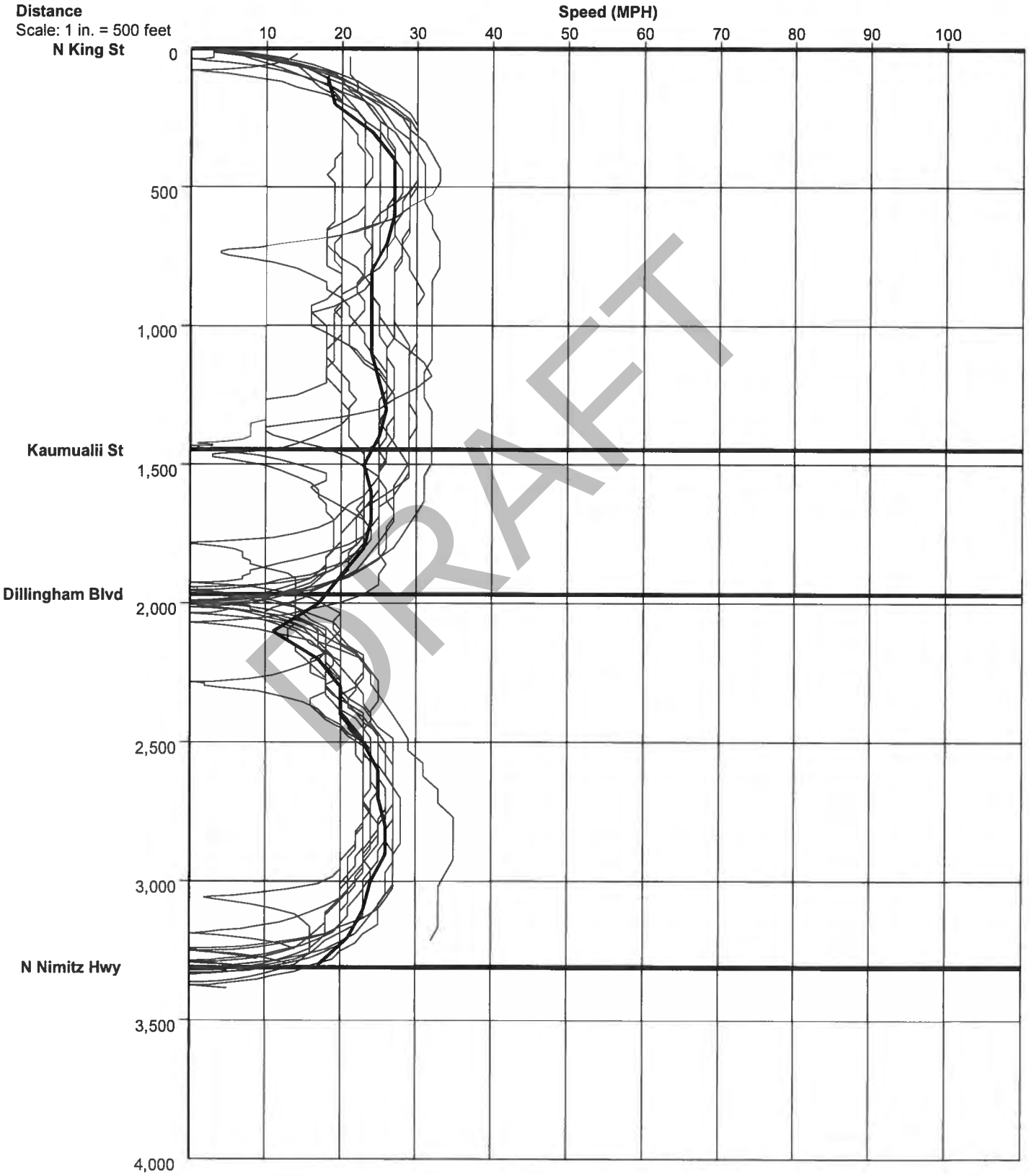
Wilson Okamoto Corporation

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



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Contraflow - Kalihi 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
Travel Time														
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
Number of Stops														
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
Average Speed														
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
Total Delay														
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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Contraflow - Kalihi Street Southbound PM

Time Less Than 0 MPH														
1	0	N. King Street												
2	1446	Kaumualii Street	36	0	0	5	1	0	0	0	63	108	0	0
3	520	Dillingham Boulevard	0	0	0	0	0	20	32	18	0	0	0	34
4	1341	N. Nimitz Highway	60	9	0	61	166	67	144	85	119	68	60	0
Total	3307		96	9	0	66	167	87	176	103	182	176	60	34
Time Less Than 35 MPH														
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	116	196	140	184	120	122	30
Total	3307		219	125	108	212	308	211	293	239	298	293	198	126
Time Less Than 55 MPH														
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	66	58
4	1341	N. Nimitz Highway	120	63	43	113	235	116	196	140	184	120	122	30
Total	3307		219	125	108	212	308	211	293	239	298	293	237	126
Travel Time (min)														
1	0	N. King Street												
2	1446	Kaumualii Street	1.42	0.78	0.82	1.30	0.92	0.75	0.68	0.78	1.67	2.65	0.82	0.63
3	520	Dillingham Boulevard	0.23	0.25	0.27	0.35	0.30	0.83	0.93	0.87	0.23	0.23	0.45	0.97
4	1341	N. Nimitz Highway	2.00	1.05	0.72	1.88	3.92	1.95	3.27	2.35	3.08	2.00	2.03	0.52
Total	3307		3.65	2.08	1.80	3.53	5.13	3.53	4.88	4.00	4.98	4.88	3.30	2.12

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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

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

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"Highway Capacity Manual," Transportation Research Board, 2000.

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

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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.

"Highway Capacity Manual," Transportation Research Board, 2000.

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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"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
KAPIOLANI BOULEVARD

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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				
Frpb, 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	

Intersection Summary			
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

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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			

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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	
Frpb, 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

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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	
Frt		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			

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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	
Frpb, 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	
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)		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

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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			

DRAFT

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
Frpb, 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

DRAFT

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			

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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
Frpb, 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

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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			

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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			
Frpb, 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	

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)	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

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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	

Intersection Summary			
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			

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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	
Frpb, 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)	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

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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	

Intersection Summary			
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			

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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	
Frpb, 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

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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			

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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
Frpb, 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

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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			

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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
Frpb, 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

DRAFT

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			

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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	
Frpb, 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	

Intersection Summary			
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

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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	

Intersection Summary			
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			

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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	
Frpb, 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	

Intersection Summary			
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

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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			

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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
Frpb, 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	

Intersection Summary			
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

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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
Flt 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
Flt 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			

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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
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.95		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
Flt 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
Flt 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	

Intersection Summary			
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

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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
Frt	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	4990		1770	5071		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	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, d1	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, d2	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			

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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
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	0.99			0.99	1.00
Satd. Flow (prot)	1863	2787		5085	1484		1681	1728			3488	1583
Flt 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

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Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
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		
Frpb, ped/bikes			0.98		
Flpb, 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		

Intersection Summary

DRAFT

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
Frpb, 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
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

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Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
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		
Frpb, 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			c0.12		
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		

Intersection Summary

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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

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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

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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				
Frpb, 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	

Intersection Summary			
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

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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	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			

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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	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	1.00	0.94	1.00	0.98	
Flpb, 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	
Flt 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	
Flt 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	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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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	
Frt		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			

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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	
Frpb, 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	
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	

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

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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			

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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
Frpb, 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

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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			

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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
Frpb, 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

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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			

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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			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.90			
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)		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	

Intersection Summary			
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

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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			
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)		5032			4880		1770	5085	1583			
Flt 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, d1		18.3			14.3		23.1	27.4	23.7			
Progression Factor		1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2		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	

Intersection Summary			
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			

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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	
Frpb, 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

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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	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	5017			5085	1711	
Flt 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			

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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	
Frpb, 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	

Intersection Summary			
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	Sum of lost time (s)	15.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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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	
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)		5021			4986			5085	1583		4974	
Flt 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	

Intersection Summary			
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			

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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
Frpb, 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

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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
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)		5045			4893			3431			3498	1583
Flt 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, d1		16.5			12.4			23.8			26.5	21.0
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		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			

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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
Frpb, 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

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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			

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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	
Frpb, 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

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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	

Intersection Summary			
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	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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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	
Frpb, 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	
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)		5002		1770	5075		1770	3539	1380	1770	3430	
Flt 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

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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			

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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

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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
Flt 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
Flt 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			

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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
Frpb, 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
Flt 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
Flt 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	

Intersection Summary			
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

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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
Frt	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	4990		1770	5071		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	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, d1	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, d2	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			

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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
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
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	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

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Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
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		
Frpb, ped/bikes			0.98		
Flpb, 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		

Intersection Summary

DRAFT

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
Frpb, 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
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

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Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
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		
Frpb, 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			c0.12		
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		

Intersection Summary

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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

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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

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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			

DRAFT

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	
Frt		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			

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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	

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			

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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			

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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			

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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	

Intersection Summary			
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			

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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	

Intersection Summary			
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			

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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			

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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			

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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			

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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	

Intersection Summary			
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			

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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	

Intersection Summary			
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

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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
Frt		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	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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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
Frt	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
v/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

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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
Frpb, 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
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)	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	

Intersection Summary			
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

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Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
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		
Frpb, ped/bikes			0.97		
Flpb, 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			c0.12		
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		

Intersection Summary

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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	
Frpb, ped/bikes		0.99						1.00			1.00	
Flpb, ped/bikes		0.99						1.00			1.00	
Frt		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	

Intersection Summary			
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	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

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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)	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	

Intersection Summary			
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	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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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
Frpb, 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)				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

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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
Frt				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			3539			3539	1583
Flt 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, d1				8.8	10.2			24.0			23.4	20.7
Progression Factor				1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2				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			

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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		

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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		

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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						1.00	1.00		0.91	
Frpb, 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

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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	

Intersection Summary			
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

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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	
Frpb, 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	
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)		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

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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

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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

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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						0.95			0.95	
Frpb, 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

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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
Frpb, 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

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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		

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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	

Intersection Summary			
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

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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	
Frpb, 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	
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	

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

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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

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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	

Intersection Summary			
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	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

DRAFT

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
Frt				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			

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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		

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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						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			

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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	

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			

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APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
ATKINSON DRIVE

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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
Frpb, 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

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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

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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
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3495		1770	3539
Flt 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, d1	21.9	21.4	3.1		3.1	4.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	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			

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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			

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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		

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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		

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	3158		1770	3539	3438	
Flt 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			

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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	
Frt	0.92		1.00	1.00	0.97	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	3257		1770	3539	3430	
Flt 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, d1	20.2		21.1	6.2	17.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	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	

Intersection Summary			
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			

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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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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
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	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	5043		1770	5085	1583	1770	1863	1583	3433	1672	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	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			

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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

Intersection Summary			
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

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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		

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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			

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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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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

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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

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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
Frpb, 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

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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
Frpb, 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

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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	
Frpb, 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	

Intersection Summary			
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

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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	
Frpb, 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	

Intersection Summary			
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

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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
Frpb, 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

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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
Frpb, 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

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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	
Frpb, 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

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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	
Frpb, 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	

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

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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
Frpb, 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
Flt 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
Flt 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

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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
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.92		1.00	0.96
Flpb, 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
Flt 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

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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	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	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	0.99		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	

Intersection Summary			
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

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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	
Frpb, 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

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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
Frpb, 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

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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
Frpb, 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

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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
Frpb, 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

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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
Frpb, 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

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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			
Frpb, 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	

Intersection Summary			
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

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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			
Frpb, 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	

Intersection Summary			
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

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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	
Frpb, ped/bikes	1.00		1.00	1.00	0.95	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	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

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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	
Frpb, ped/bikes	1.00		1.00	1.00	0.94	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.99		1.00	1.00	0.89	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3477		1770	3539	1555	
Flt 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, d1	22.9		36.0	6.6	35.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	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

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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

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
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

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

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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

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
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

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

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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
Frpb, 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

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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
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5062			3533	1770	1533
Flt 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	

Intersection Summary			
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

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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	
Frt		0.92	0.85	1.00	0.99		1.00	0.98			1.00	
Flt 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	
Flt 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

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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	

Intersection Summary			
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

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Arterial Level of Service: EB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Puuhale 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
Puuhale 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

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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
Frpb, 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

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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	
Frpb, 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	

Intersection Summary			
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

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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
Frpb, 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

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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	
Frpb, 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		

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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
Frpb, 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
Flt 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
Flt 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	

Intersection Summary			
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		

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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	
Frpb, 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	

Intersection Summary			
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		

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Arterial Level of Service: EB #1

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Puuhale 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
Puuhale 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	
Frpb, 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

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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	
Frpb, 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

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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	
Frpb, ped/bikes	1.00	0.99		1.00	0.91		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	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	

Intersection Summary			
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

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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	
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	3523		1770	3283		1770	3467		1770	3393	
Flt 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	

Intersection Summary			
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

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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	
Frpb, 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	

Intersection Summary			
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

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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	
Frpb, 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	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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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	
Frpb, 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

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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	
Frpb, 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	

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

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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	
Frpb, 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	

Intersection Summary			
HCM 2000 Control Delay	68.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	235.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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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	
Frt	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	

Intersection Summary			
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

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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	
Frpb, 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

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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	
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	
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	

Intersection Summary			
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

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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	
Frpb, 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	

Intersection Summary			
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

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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	
Frpb, 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			0.69	
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	

Intersection Summary			
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		

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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	
Frt	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	

Intersection Summary			
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		

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