Traffic Impact Report

Victoria Ward Development

Phase 1A

Prepared For

Victoria Ward, Limited

Prepared By

Wilson Okamoto Corporation

October 2012

TRAFFIC IMPACT REPORT

FOR THE

VICTORIA WARD DEVELOPMENT

Phase 1A

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October 2012

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF APPENDICES

I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the potential traffic impacts resulting from Phase 1A of the Victoria Ward Development in Kakaako on the island of Oahu. Phase 1A of the proposed project entails the replacement of existing commercial uses and parking areas with new residential and commercial/retail uses.

B. Scope of Study

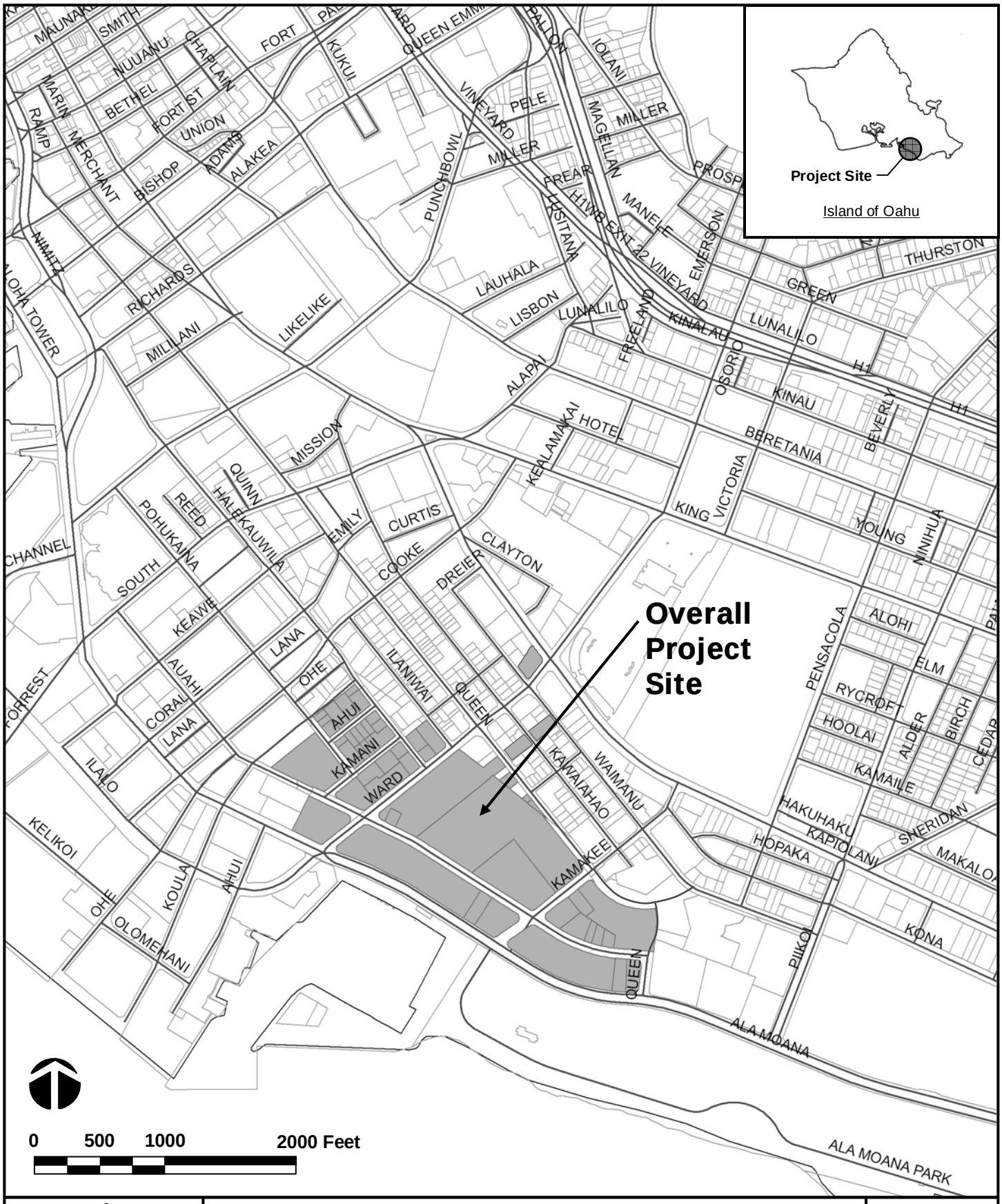
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The project site for the overall Victoria Ward development currently encompasses Ward Warehouse and Ward Center, Ward Entertainment Center Ward Village Shops, and other surrounding commercial and office buildings. The proposed development is bounded by Ala Moana Boulevard to the south, Koula Street to the west, Waimanu Street to the north, and Queen Lane to the east. Phase 1A entails the development of three smaller parcels within the project area (see Figure 1). The first parcel (referred to as "Block C") is currently a surface parking area located across Auahi Street from the existing Ward Entertainment Center. The second parcel (referred to as "Block K") is located on the northeast corner of the Kamakee Street



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	**VICTORIA WARD DEVELOPMENT** LOCATION AND VICINITY MAP	FIGURE 1

and Auahi Street intersection. The third parcel (referred to as "Block O") is located on the northwest corner of the Ward Avenue and Halekawila Street intersection.

B. Project Characteristics

The project site for the Victoria Ward development currently houses a variety of commercial and office uses. The overall development is expected to be implemented in phases over the next 10-15 years with the first phase (referred to as "Phase 1A" expected to be completed by the Year 2016 and include the following:

- Block C: Approximately 20,000 square feet (sf) of commercial/retail space with 210 multi-family residential units
- Block K: Approximately 60,000 sf of commercial/retail space with 300 multi-family residential units
- Block O: Approximately 30,000 sf of commercial/retail space with 300 multi-family residential units

Primary access for Block C will be provided via a driveway off Kamakee Street while access for Block K will be provided via driveways off Auahi Street, Kamakee Street and Queen Street. Primary access for Block O will be provided off Halekauwila Street. Figure 2 shows the proposed site plan.

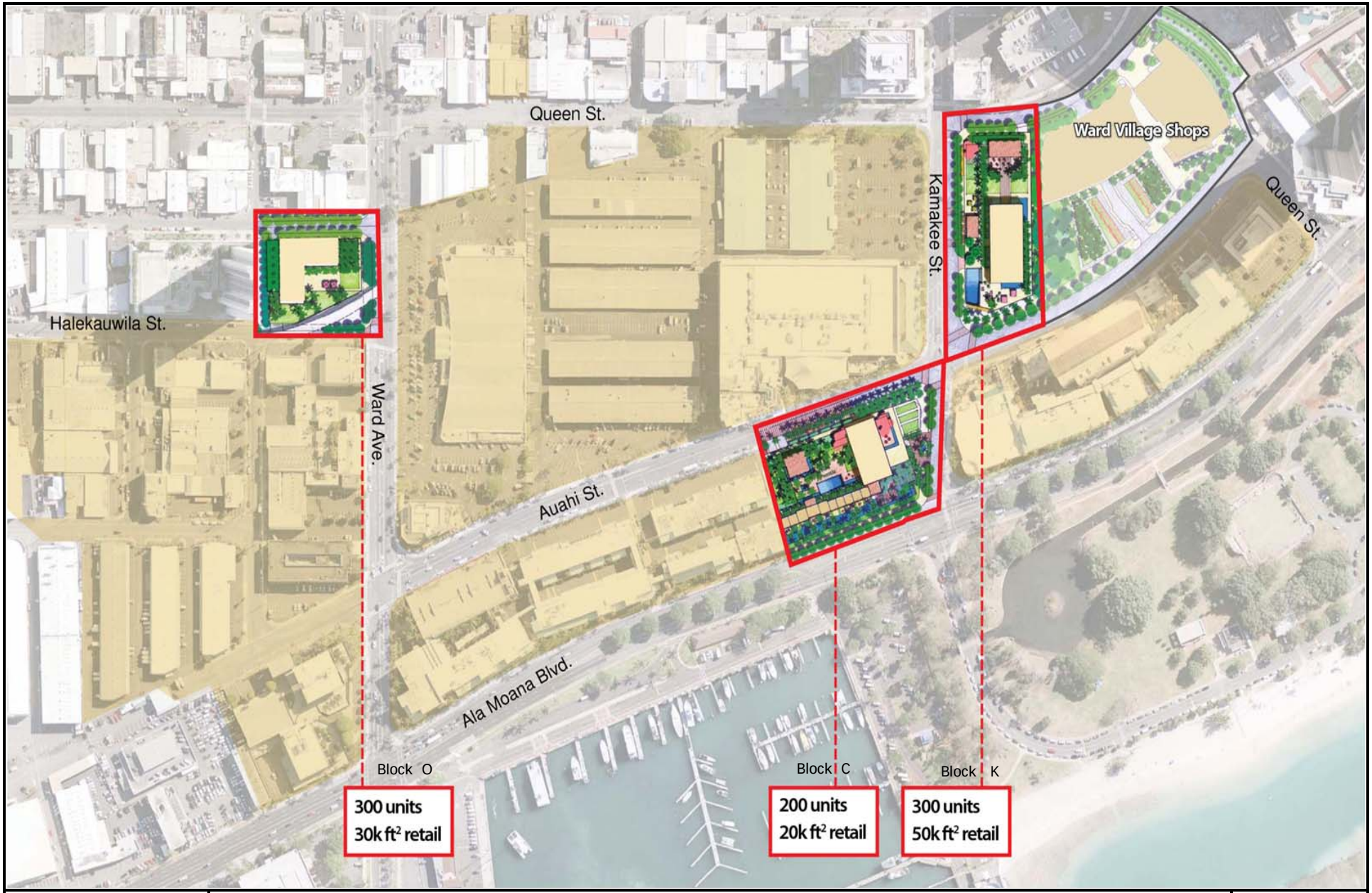
III. EXISTING TRAFFIC CONDITIONS

A. Area Roadway System

East-west traffic through the Kakaako area is served by a number of existing roadways which include Ala Moana Boulevard, Auahi Street, and Queen Street while north-south traffic is served by a number of existing roadways including Ward Avenue and Kamakee Street.

Ala Moana Boulevard is a predominantly six-lane, two-way roadway that serves commercial uses within the project area. The posted speed limit is 35 mph with the two direction of traffic divided by a raised and landscaped median. At the intersections with Ward Avenue and Kamakee Street, the Ala Moana Boulevard approaches have exclusive left-turn lane and three lanes that serve through and right-turn traffic movements.

Auahi Street is a four-lane, two-way roadway that runs parallel to Ala Moana Boulevard through the project area providing access to commercial uses within the project area. On-street parking is currently allowed along portions of Auahi Street. At the intersections with Ward Avenue and Kamakee Street, the Auahi Street



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approaches have one to two lanes that serve through and right-turn traffic movements and exclusive left-turn lanes.

Queen Street is a two-lane, two-way roadway with on-street parking allowed along both sides of the roadway within the project area serving residential, commercial and industrial land uses. The roadway expands to a four-lane roadway east of the intersection with Kamakee Street, with new segments recently constructed to connect the existing segments of Queen Street west of Kamakee Street and off of Ala Moana Boulevard. The Queen Street approaches of the intersection with Ward Avenue have one lane that serve through and left-turn traffic movements and exclusive (de-facto) right-turn lanes while those at the intersection with Kamakee Street have one to two lanes that serve through and right-turn traffic movements, and exclusive left-turn lanes. At the intersection with Ala Moana Boulevard, Queen Street has two exclusive left-turn lanes and an exclusive right-turn lane.

Ward Avenue is a predominantly four-lane, two-way roadway that provides access to the commercial and office uses in the project area, as well as, serves as a connector roadway between Ala Moana Boulevard and the Interstate H-1 Freeway. The speed limit is posted at 25 mph. At the intersections with Ala Moana Boulevard, Auahi Street, Halekauwila Street, and Queen Street, the Ward Avenue approaches have two lanes that serve through and right-turn traffic movements and exclusive left-turn lanes with the exception of the northbound approach of the intersection with Ala Moana Boulevard which has two lanes that serve left-turn and through traffic movements and an exclusive right-turn lane.

Kamakee Street is a predominantly four-lane, two-way roadway that that serves as a connector roadway between Kapiolani Boulevard and Ala Moana Boulevard. The posted speed limit is 25 mph and on-street parking allowed along portions of Kamakee Street. At the intersection with Ala Moana Boulevard, the Kamakee Street approaches have a shared left-turn and through lane, and an exclusive right-turn lane while those at the intersection with Queen Street have two lanes that serve all traffic movements. At the intersection with Auahi Street, the northbound approach of Kamakee Street has two lanes that serve through and right-turn traffic movements, and an exclusive left-turn lane while the southbound approach has one through lane and exclusive turning lanes.

B. Traffic Volumes and Conditions

1. General

a. Field Investigation

The existing traffic count data utilized for this study consisted of turning movement count surveys during the weekday morning and afternoon peak commuter traffic periods in the project vicinity. The

surveys were conducted during April and May 2011 between the weekday morning peak hours of 6:00 and 9:00 AM and afternoon peak hours of 3:00 PM and 6:00 PM at the following intersections:

- Ala Moana Boulevard and Ward Avenue
- Ward Avenue and Auahi Street
- Ward Avenue and Halekauwila Street
- Ward Avenue and Queen Street
- Ala Moana Boulevard and Kamakee Street
- Kamakee Street and Auahi Street
- Kamakee Street and Queen Street
- Ala Moana Boulevard and Queen Street

It should be noted that at the time of the field investigation, the intersection of Kamakee Street and Queen Street was an unsignalized, stop-controlled intersection. As such, the analysis of existing conditions reflects the intersection control being utilized during the field investigation. Appendix A includes the existing traffic count 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", developed by Trafficware. The analysis is based on the concept of Level of Service (LOS).

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" representing unacceptable or potentially congested traffic operating conditions. It should be noted, however, that the delays for an individual lane group cannot always be considered a measurement of failure. In some instances, traffic in a turning lane or along a minor cross street experiencing LOS "E" at a signal with a high cycle length is likely experiencing that delay because of the significant time it takes the signal to serve all other phases before it is time to serve that phase.

This delay does not mean the signal is functioning poorly or over capacity, it is a by-product of the way traffic must be served at the intersection.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the roadway 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 generally indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

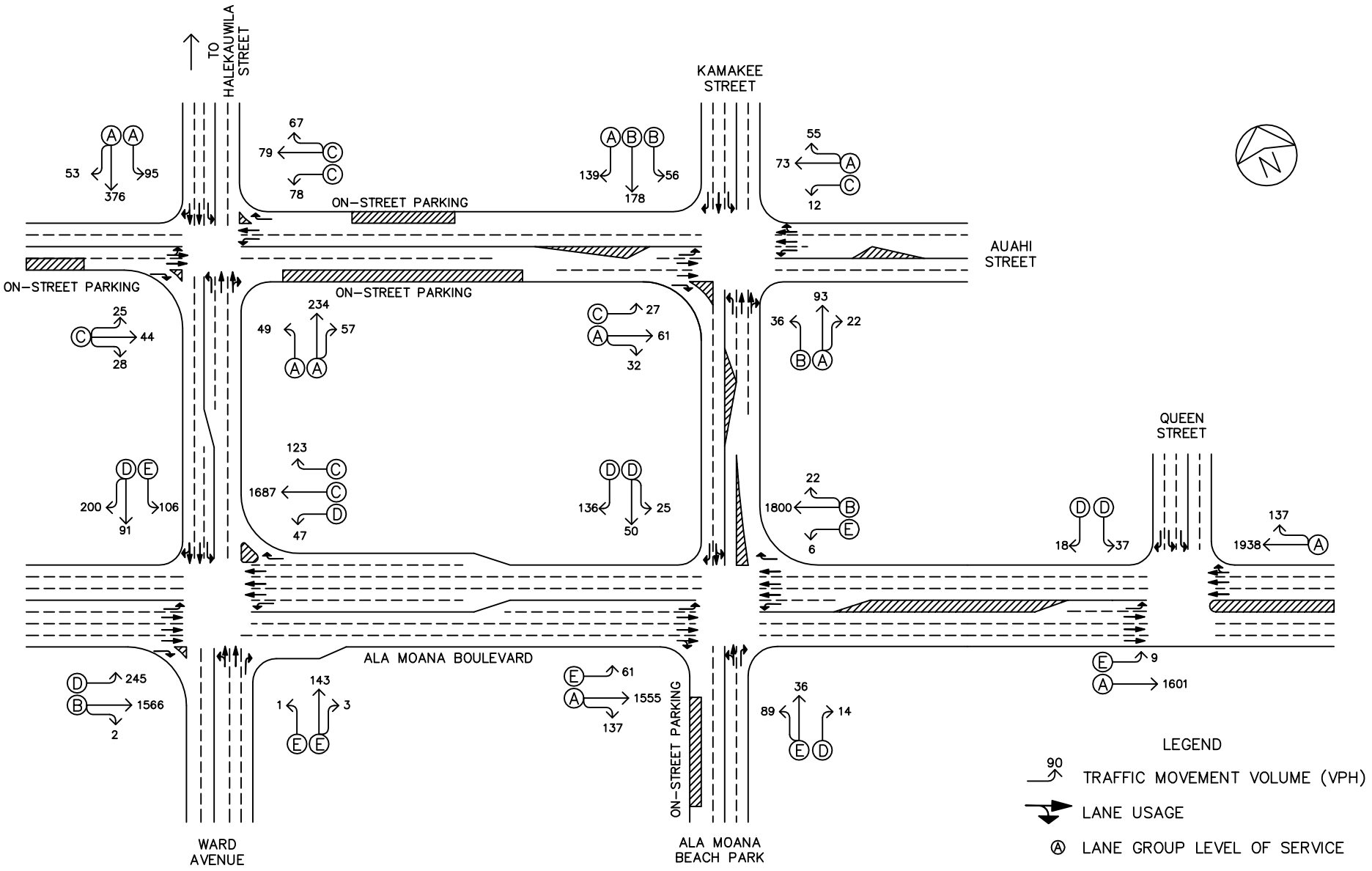
2. Existing Peak Hour Traffic

a. General

Figures 3 to 6 show the existing AM and PM peak period traffic volumes and traffic operating conditions. The AM peak hour of traffic generally occurs between the hours of 7:00 AM and 8:00 AM while the PM peak hour of traffic generally occurs between the hours of 4:30 PM and 5:30 PM. The analysis is based on these peak hour time periods for each intersection. LOS calculations are included in Appendix C.

b. Ala Moana Boulevard and Ward Avenue

At the intersection with Ward Avenue, Ala Moana Boulevard carries 1,813 vehicles eastbound and 1,857 vehicles westbound at this intersection during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 2,447 vehicles traveling eastbound and 1,944 vehicles traveling westbound. The critical movements on the Ala Moana Boulevard approaches of the intersection are the eastbound left-turn traffic movement which operates at LOS "D" and LOS "E" during the AM and PM peak periods, respectively, and the westbound through traffic movement



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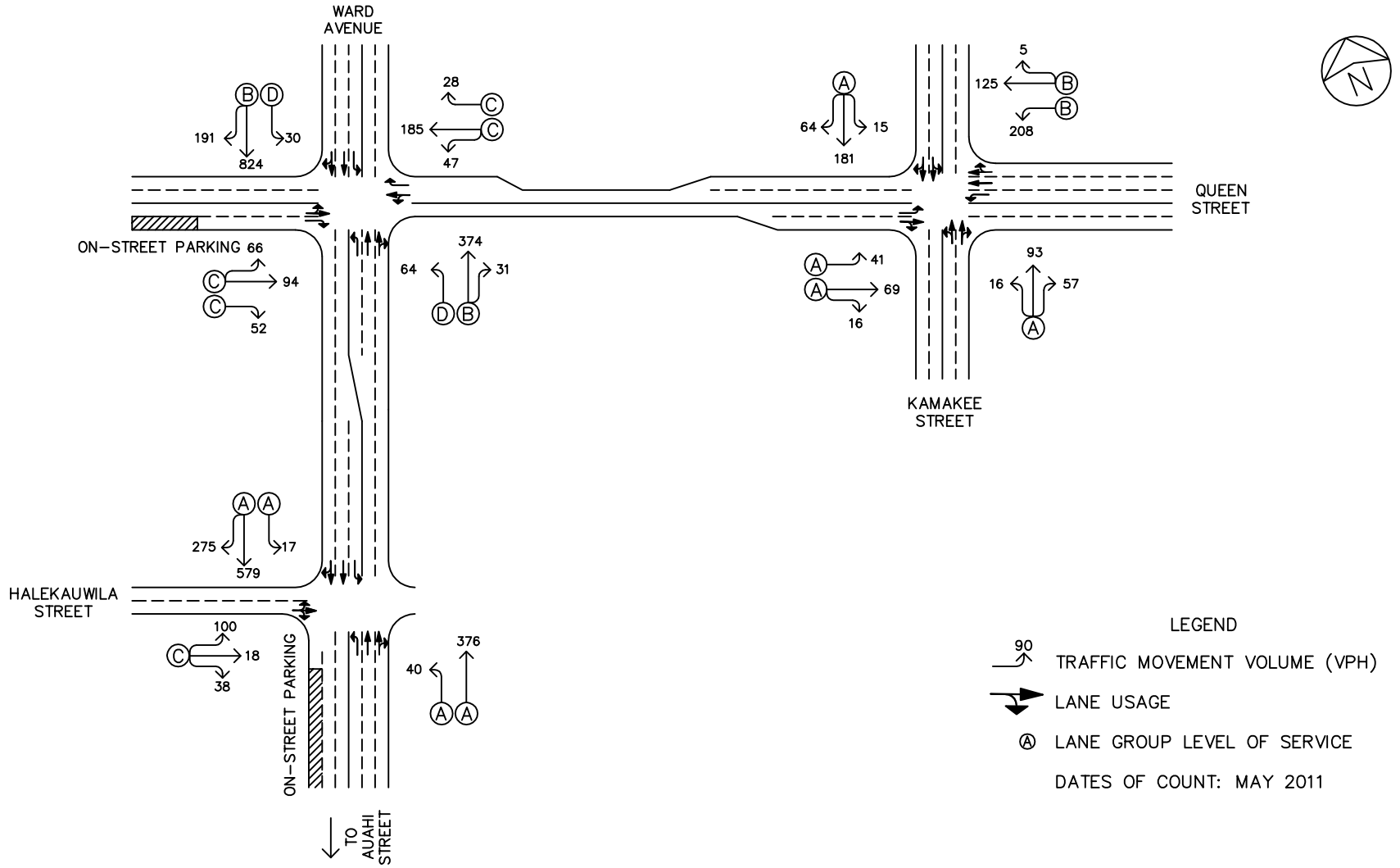
VICTORIA WARD DEVELOPMENT - PHASE 1A

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3



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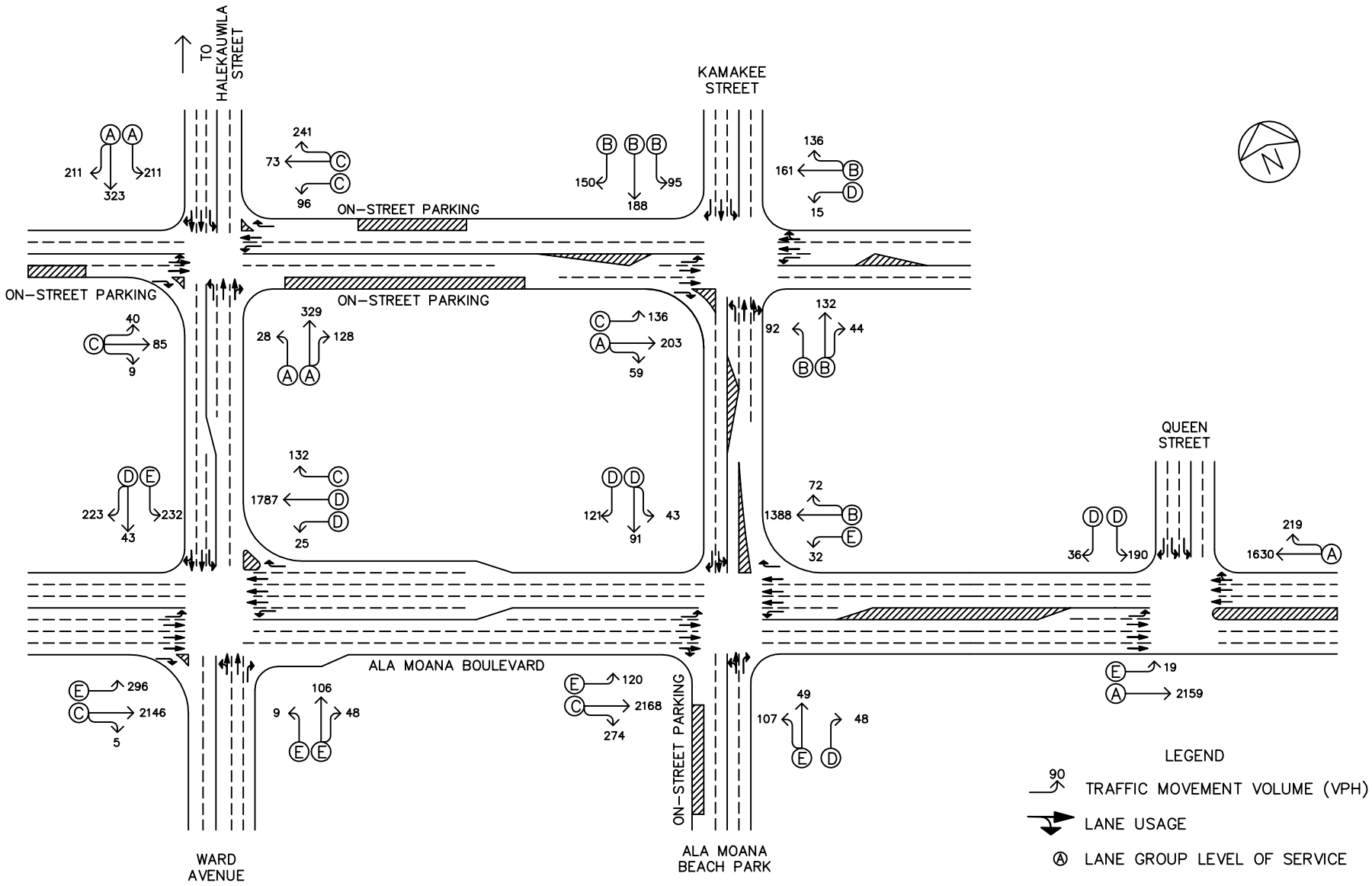
VICTORIA WARD DEVELOPMENT - PHASE 1A

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 4



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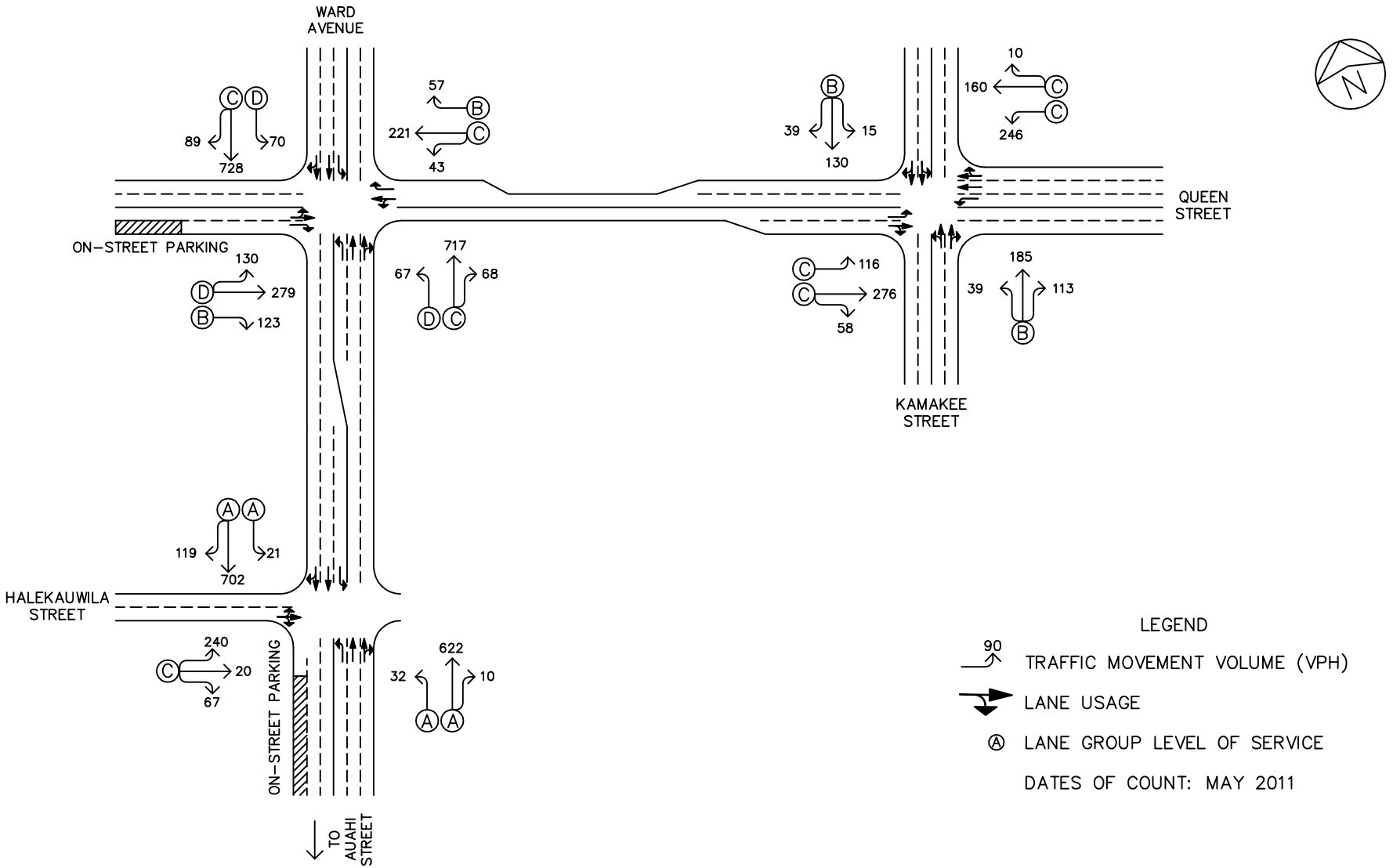
VICTORIA WARD DEVELOPMENT - PHASE 1A

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 5



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VICTORIA WARD DEVELOPMENT - PHASE 1A

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 6

which operate at LOS "C" and LOS "D" during the AM and PM peak periods, respectively.

The Ward Avenue approaches of the intersection carry 147 vehicles northbound and 397 vehicles southbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 163 vehicles traveling northbound and 498 vehicles traveling southbound. The critical traffic movements on the Ward Avenue approaches are the southbound left-turn traffic movement which operates at LOS "E" during both peak periods and the southbound through and right-turn traffic movement which operates at LOS "D" during both peak periods.

c. Ward Avenue and Auahi Street

At the intersection with Auahi Street, Ward Avenue carries 340 vehicles northbound and 524 vehicles southbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 485 vehicles traveling northbound and 745 vehicles traveling southbound. The critical traffic movements on the Ward Avenue approaches of the intersection are the northbound through and right-turn and southbound left-turn traffic movements which operate at LOS "A" during both peak periods.

The Auahi Street approaches of the intersection carry 97 vehicles eastbound and 224 vehicles westbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 134 vehicles traveling eastbound and 410 vehicles traveling westbound. The traffic movements on both approaches of Auahi Street operate at LOS "C" during both peak periods.

d. Ward Avenue and Halekauwila Street

At the intersection with Halekauwila Street, Ward Avenue carries 416 vehicles northbound and 871 vehicles southbound during the AM peak hour of traffic. During the PM peak period, traffic

volumes are higher with 664 vehicles traveling northbound and 842 vehicles traveling southbound. The critical traffic movements on the Ward Avenue approaches of the intersection are the northbound and southbound through and right-turn traffic movements which operate at LOS "A" during both peak periods.

The Halekauwila Street approach of the intersection carries 156 vehicles and 327 vehicles eastbound during the AM and PM peak hours of traffic, respectively. This approach operates at LOS "C" during both peak periods.

e. Ward Avenue and Queen Street

At the intersection with Queen Street, Ward Avenue carries 469 vehicles northbound and 1,045 vehicles southbound during the AM peak hour of traffic. During the PM peak period, the overall traffic volume is higher with 852 vehicles traveling northbound and 887 vehicles traveling southbound. The critical traffic movements on the Ward Avenue approaches of the intersection are the northbound and southbound through and right-turn traffic movements which operate at LOS "B" and LOS "C" during the AM and PM peak periods, respectively.

The Queen Street approaches of the intersection carry 212 vehicles eastbound and 260 vehicles westbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 532 vehicles traveling eastbound and 321 vehicles traveling westbound. The critical traffic movements on the Queen Street approaches are the eastbound and westbound left-turn and through traffic movements which operate at LOS "C" during the AM peak period, and LOS "D" and LOS "C," respectively, during the PM peak period.

f. Ala Moana Boulevard and Kamakee Street

At the intersection with Kamakee Street, Ala Moana Boulevard carries 1,753 vehicles eastbound and 1,828 vehicles westbound at this intersection during the AM peak hour of traffic. During the PM peak period, the overall traffic volume is higher with 2,562 vehicles traveling eastbound and 1,492 vehicles traveling westbound. The critical movements on the Ala Moana Boulevard approaches of the intersection are the eastbound through and right-turn traffic movement which operates at LOS "A" and LOS "C" during the AM and PM peak periods, respectively, and the westbound through and right-turn traffic movement which operate at LOS "B" during both peak periods.

The Kamakee Street approach of the intersection carries 211 vehicles and 255 vehicles southbound during the AM and PM peak hours of traffic, respectively. The northbound approach of the intersection is comprised of the access road for Ala Moana Beach Park which carries 139 vehicles and 204 vehicles northbound during the AM and PM peak periods, respectively. The critical traffic movements these approaches of the intersection are the northbound left-turn and through and southbound right-turn traffic movements which operate at LOS "E" and LOS "D," respectively, during both peak periods.

g. Kamakee Street and Auahi Street

At the intersection with Auahi Street, Kamakee Street carries 151 vehicles northbound and 373 vehicles southbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 268 vehicles traveling northbound and 433 vehicles traveling southbound. The critical movements on the Kamakee Street approaches are the northbound through and right-turn traffic movement which operates at LOS "A" and LOS "B" during the AM and PM peak periods, respectively, and the southbound left-turn traffic movement which operates at LOS "B" during both peak periods.

The Auahi Street approaches of the intersection carry 120 vehicles eastbound and 140 vehicles westbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 398 vehicles traveling eastbound and 312 vehicles traveling westbound. The critical movements on the Auahi Street approaches are the eastbound left-turn traffic movement which operates at LOS "C" during both peak periods and the westbound through and right-turn traffic movement which operates at LOS "A" and LOS "B" during the AM and PM peak periods, respectively.

h. Kamakee Street and Queen Street

At the intersection with Queen Street, Kamakee Street carries 166 vehicles northbound and 260 vehicles southbound during the AM peak hour of traffic. During the PM peak period, the overall traffic volume is higher with 337 vehicles traveling northbound and 184 vehicles traveling southbound. Under the unsignalized intersection control in place during the field investigation, the Kamakee Street approaches of the intersection operate at LOS "A" and LOS "B" during the AM and PM peak periods, respectively. As previously mentioned, a traffic signal system was installed at this intersection after the field investigation.

The Queen Street approaches of the intersection carry 126 vehicles eastbound and 338 vehicles westbound during the AM peak hour of traffic. During the PM peak period, traffic volumes are higher with 450 vehicles traveling eastbound and 416 vehicles traveling westbound. Under the unsignalized intersection control in place during the field investigation, eastbound approach operates at LOS "A" and LOS "C" during the AM and PM peak periods, respectively, and the westbound approach at LOS "B" and LOS "C" during the AM and PM peak periods, respectively.

i. Ala Moana Boulevard and Queen Street

At the intersection with Queen Street, Ala Moana Boulevard carries 1,610 vehicles eastbound and 2,075 vehicles westbound at this intersection during the AM peak hour of traffic. During the PM peak period, the overall traffic volume is higher with 2,178 vehicles traveling eastbound and 1,849 vehicles traveling westbound. The critical movements on the Ala Moana Boulevard approaches of the intersection are eastbound through and westbound through and right-turn traffic movements which operate at LOS "A" " during both peak periods.

The Queen Street approach of the intersection carries 55 vehicles and 226 vehicles southbound during the AM and PM peak hours of traffic, respectively. The critical traffic movement on the Queen Street approach of the intersection is the southbound left-turn traffic movement which operates LOS "D" during both peak periods.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per dwelling unit or 1,000 square feet of development. Table 1 summarizes the trip generation characteristics of the existing uses that will be replaced during Phase 1A of the development and Table 2 summarizes the project site trip generation characteristics for Phase 1A applied to the AM and PM peak periods of traffic.

Table 1: Existing Peak Hour Trip Generation

Retail (Shopping Center)		
INDEPENDENT VARIABLE**:**	Exist 1,000 sf of development = 23.281	
		PROJECTED TRIP ENDS
AM PEAK	ENTER	14
	EXIT	9
	TOTAL	23
PM PEAK	ENTER	43
	EXIT	44
	TOTAL	87
Office (General Office Building)		
INDEPENDENT VARIABLE:	Exist 1,000 sf of development = 25.431	
		PROJECTED TRIP ENDS
AM PEAK	ENTER	35
	EXIT	5
	TOTAL	40
PM PEAK	ENTER	34
	EXIT	5
	TOTAL	39
Restaurant (High Turnover Sit-Down Restaurant)		
INDEPENDENT VARIABLE:	Exist 1,000 sf of development = 3.47	
		PROJECTED TRIP ENDS
AM PEAK	ENTER	21
	EXIT	19
	TOTAL	40
PM PEAK	ENTER	23
	EXIT	16
	TOTAL	39
EXISTING TOTALS		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	70
	EXIT	33
	TOTAL	103
PM PEAK	ENTER	100
	EXIT	65
	TOTAL	165

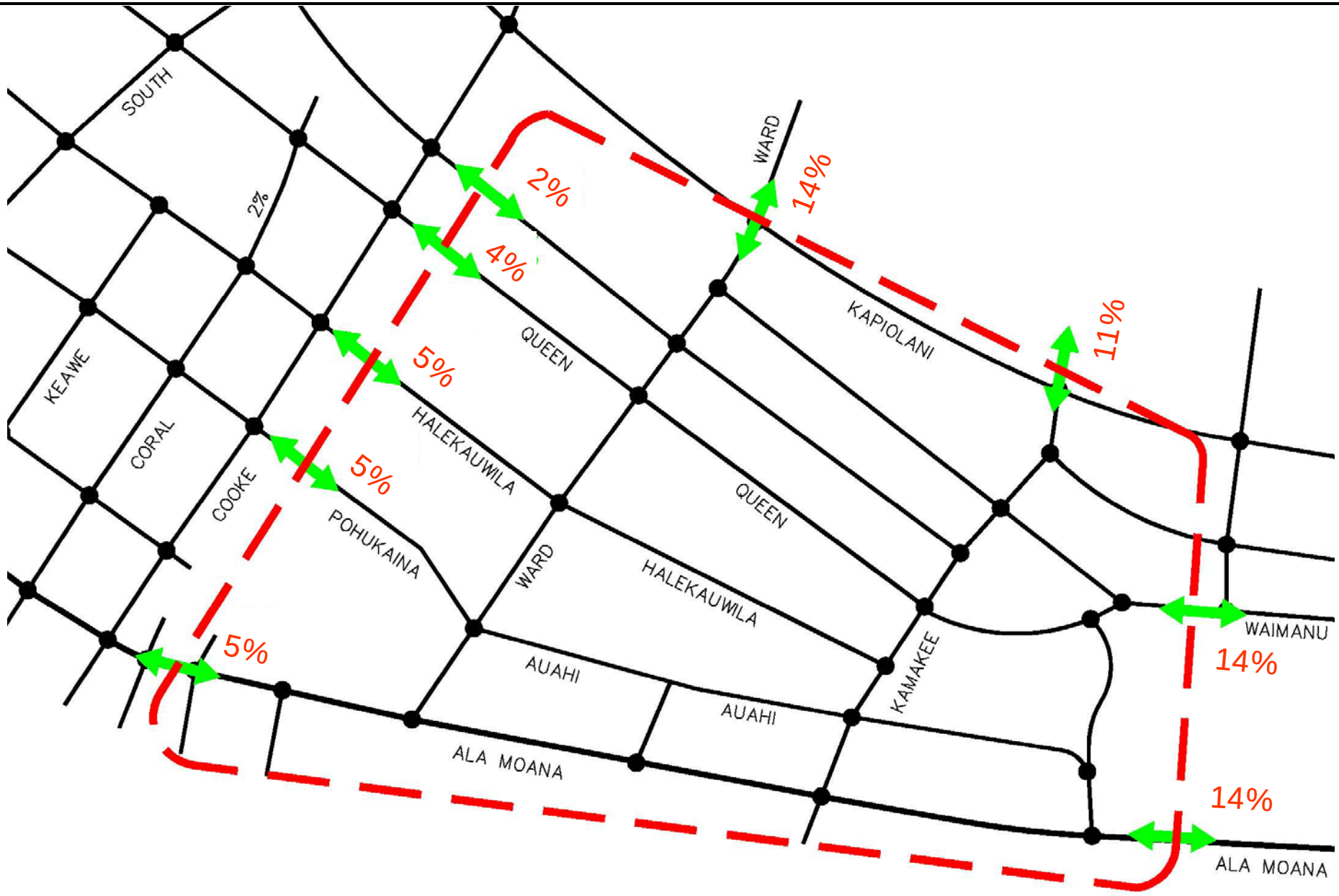
Table 2: Phase 1A Peak Hour Trip Generation

Retail (Shopping Center)		
INDEPENDENT VARIABLE**:** 1,000 sf of development = 200		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	122
	EXIT	78
	TOTAL	200
PM PEAK	ENTER	366
	EXIT	380
	TOTAL	746
Residential (High Rise Apartment)		
INDEPENDENT VARIABLE: # of Units = 800		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	60
	EXIT	212
	TOTAL	272
PM PEAK	ENTER	198
	EXIT	122
	TOTAL	320
Restaurant (High Turnover Sit-Down Restaurant)		
INDEPENDENT VARIABLE: 1,000 sf of development = 22		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	131
	EXIT	122
	TOTAL	253
PM PEAK	ENTER	145
	EXIT	101
	TOTAL	246
YEAR 2016 TOTALS		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	313
	EXIT	412
	TOTAL	725
PM PEAK	ENTER	709
	EXIT	603
	TOTAL	1312

The trip generation methodology developed by ITE also includes provisions for pass-by trips and internal capture of trips. Pass-by trips are generated when vehicles that would be traveling through the area whether or not the project was developed make an intermediate stop at the project site between their origin and primary destination. Internal capture of trips accounts for vehicles that visit more than one destination within the same area without adding external vehicular trips to the surrounding major roadways. In addition, the project site is currently served by established, convenient transit routes that may reduce the number of vehicular trips added to the surrounding major roadways. As such, the trip generation characteristics for the proposed project were adjusted to account for the influence of these factors utilizing the current Oahu Metropolitan Planning Organization (OMPO) regional travel forecasting model. The OMPO model contains estimated land usage for the island of Oahu by the Year 2035 and utilizes this data to forecast individual vehicle trips between destinations within the model. It should be noted that the City and County of Honolulu is planning to develop a fixed guideway transit system that will extend from Kapolei to the central Honolulu area thereby providing an alternate mode of travel through the Kakaako area. These future plans are expected to include the development of a transit station within the project site. However, the schedule for this station and the guideway section serving the project site is unknown at this time. As such, the influence of the resulting increased transit service in the project vicinity was not incorporated into the analyses included in this study. In addition, the OMPO model was also utilized to develop trip distribution percentages for the proposed development (see Figure 7).

B. Through Traffic Forecasting Methodology

The travel forecast utilized for this study is based on the OMPO regional forecasting model which includes the development of other projects such as the adjacent Kamehameha Schools/Bishop Estate (KSBE) lands to the west. The use of the OMPO model more accurately reflects the anticipated impacts of traffic growth on the island more than the use of historical traffic count data. The travel forecast utilized for the OMPO model is based on Societal Economic Data (SED) which



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	**VICTORIA WARD DEVELOPMENT – PHASE 1A** DISTRIBUTION OF EXTERNAL SITE-GENERATED TRIPS	FIGURE 7

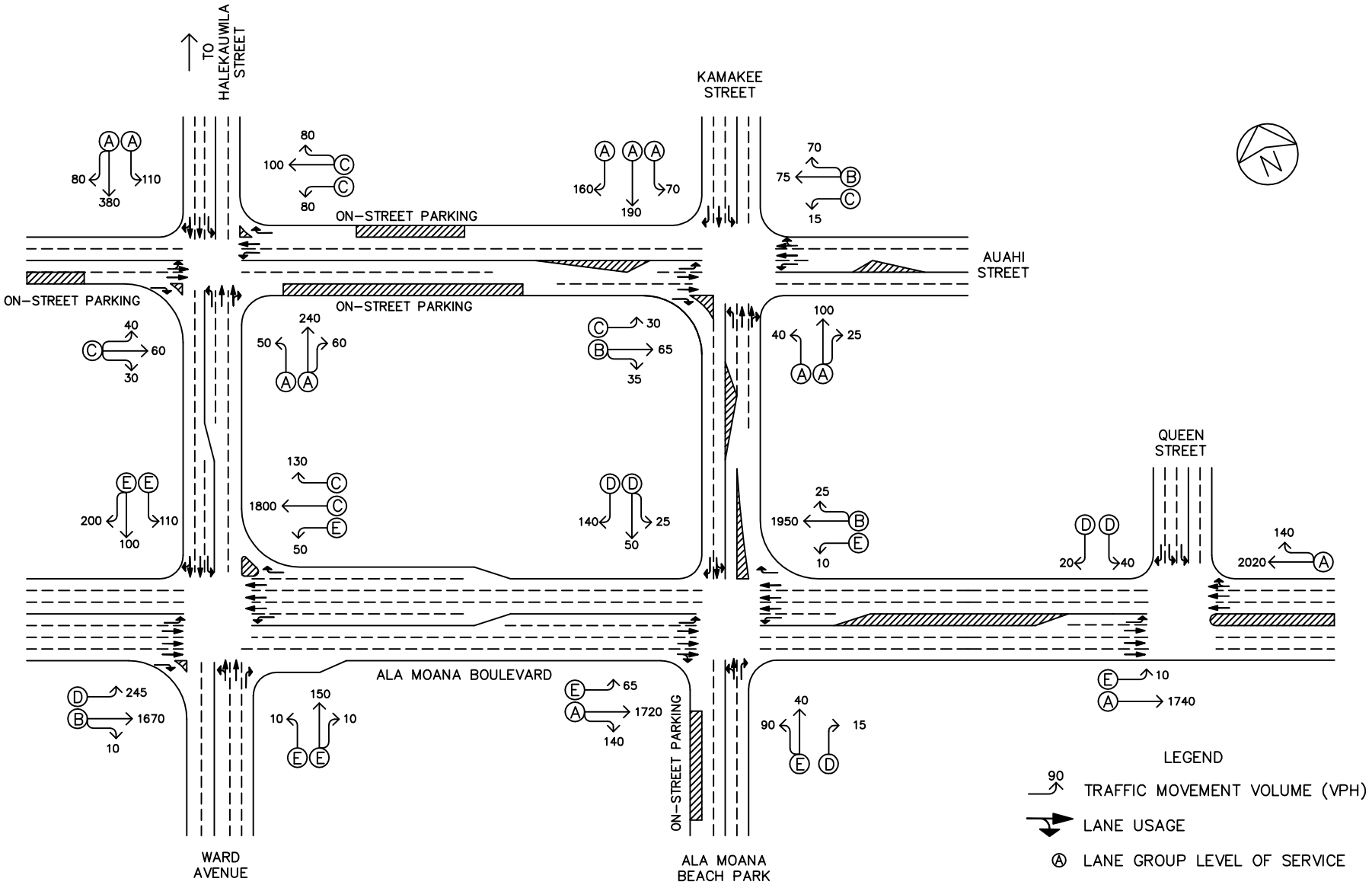
represents the population distribution within a multitude of traffic analysis zones. As such, since population estimates for the island of Oahu indicate that population growth is expected to be relatively linear to the Year 2035, a linear growth in traffic was also assumed over that period. Consequently, the traffic forecast from the OMPO model was scaled appropriately to determine Year 2016 traffic volumes.

C. Total Traffic Volumes Without Project

The projected year 2016 AM and PM peak period traffic volumes and operating conditions without Phase 1A of the Victoria Ward development are shown in Figures 8 to 11, and summarized in Table 3. The existing levels of service are included for comparison purposes. LOS calculations are included in Appendix D.

Table 3: Existing and Projected (Without Project) LOS Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Proj	Exist	Year 2016 w/out Proj
Ala Moana Blvd/ Ward Ave	Eastbound	LT	D	D	E	E
	Westbound	TH	C	C	D	D
	Southbound	LT	E	E	E	E
		TH-RT	D	E	D	D
Ward Ave/ Auahi St	Eastbound	LT-TH-RT	C	C	C	C
	Westbound	LT	C	C	C	C
		TH-RT	C	C	C	C
	Northbound	TH-RT	A	A	A	A
	Southbound	LT	A	A	A	A
Ward Ave/ Halekauwila St	Eastbound	LT-TH-RT	C	C	C	C
	Northbound	TH-RT	A	A	A	A
	Southbound	TH-RT	A	A	A	A
Ward Ave/ Queen St	Eastbound	LT-TH	C	C	D	D
	Westbound	LT-TH	C	C	C	C
	Northbound	TH-RT	B	B	C	C
	Southbound	TH-RT	B	B	C	C
Ala Moana Blvd/ Kamakee St	Eastbound	TH-RT	A	A	C	C
	Westbound	TH-RT	B	B	B	B
	Northbound	LT-TH	E	E	E	F
	Southbound	RT	D	D	E	F



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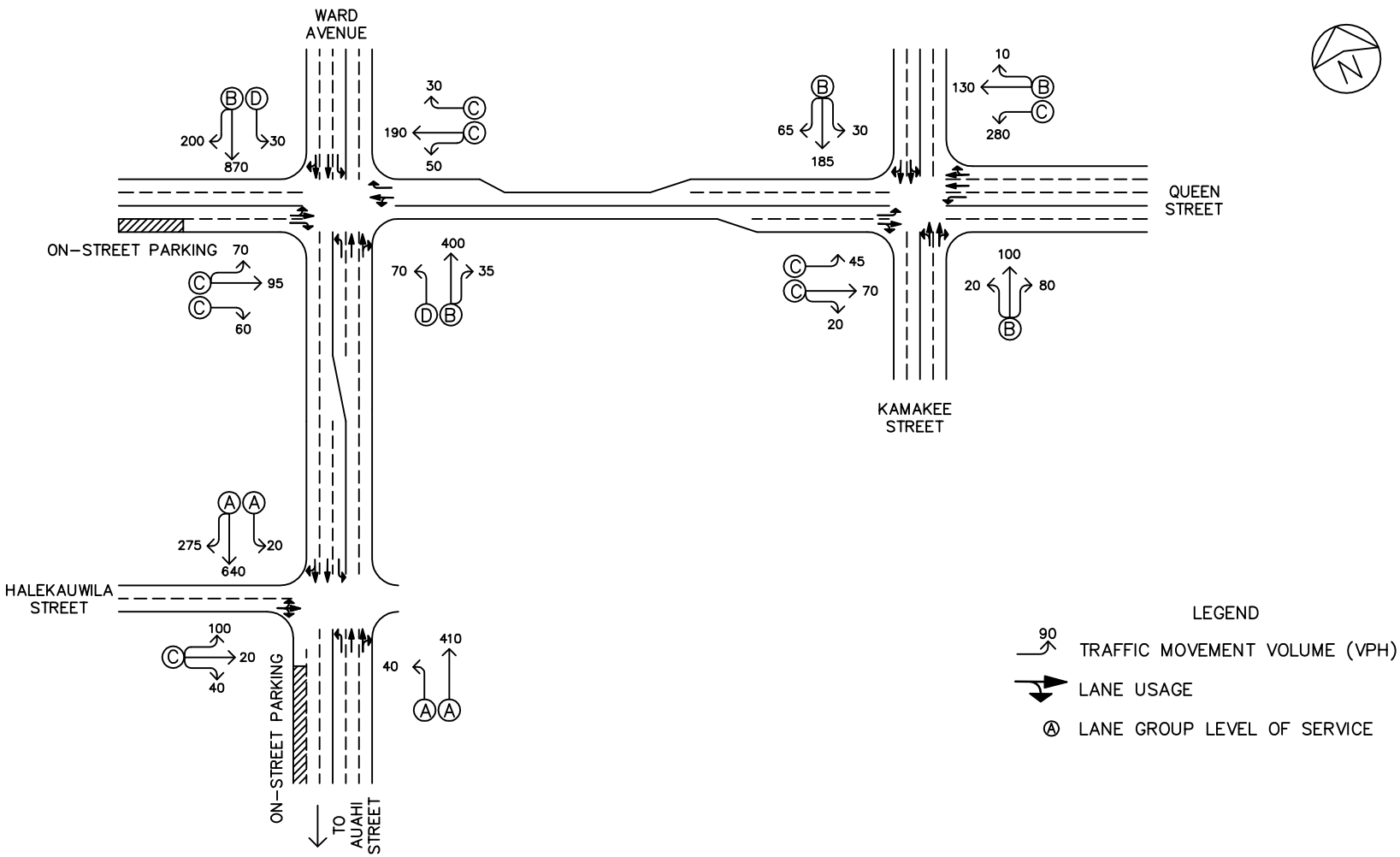
VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 8



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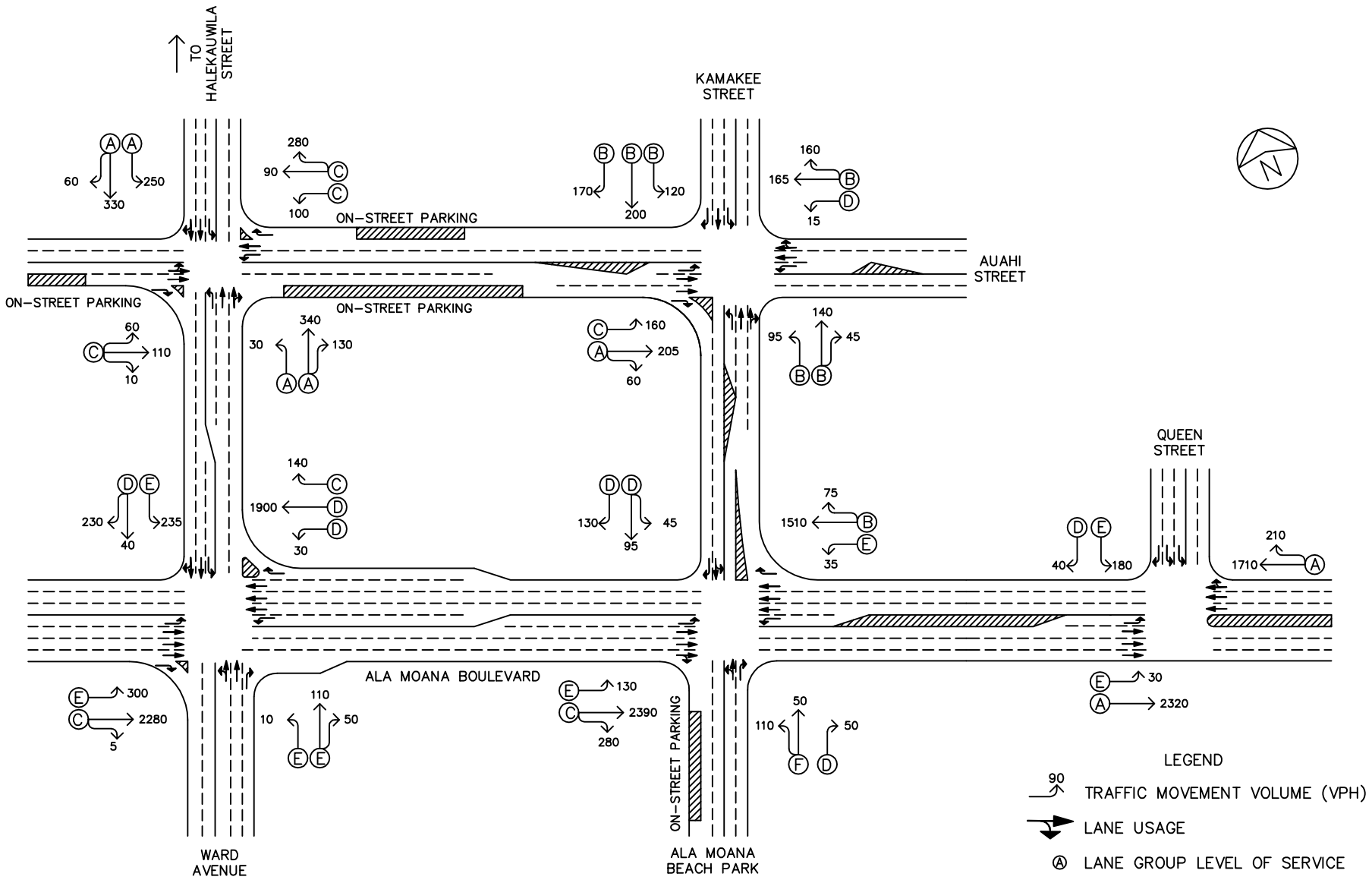
VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 9



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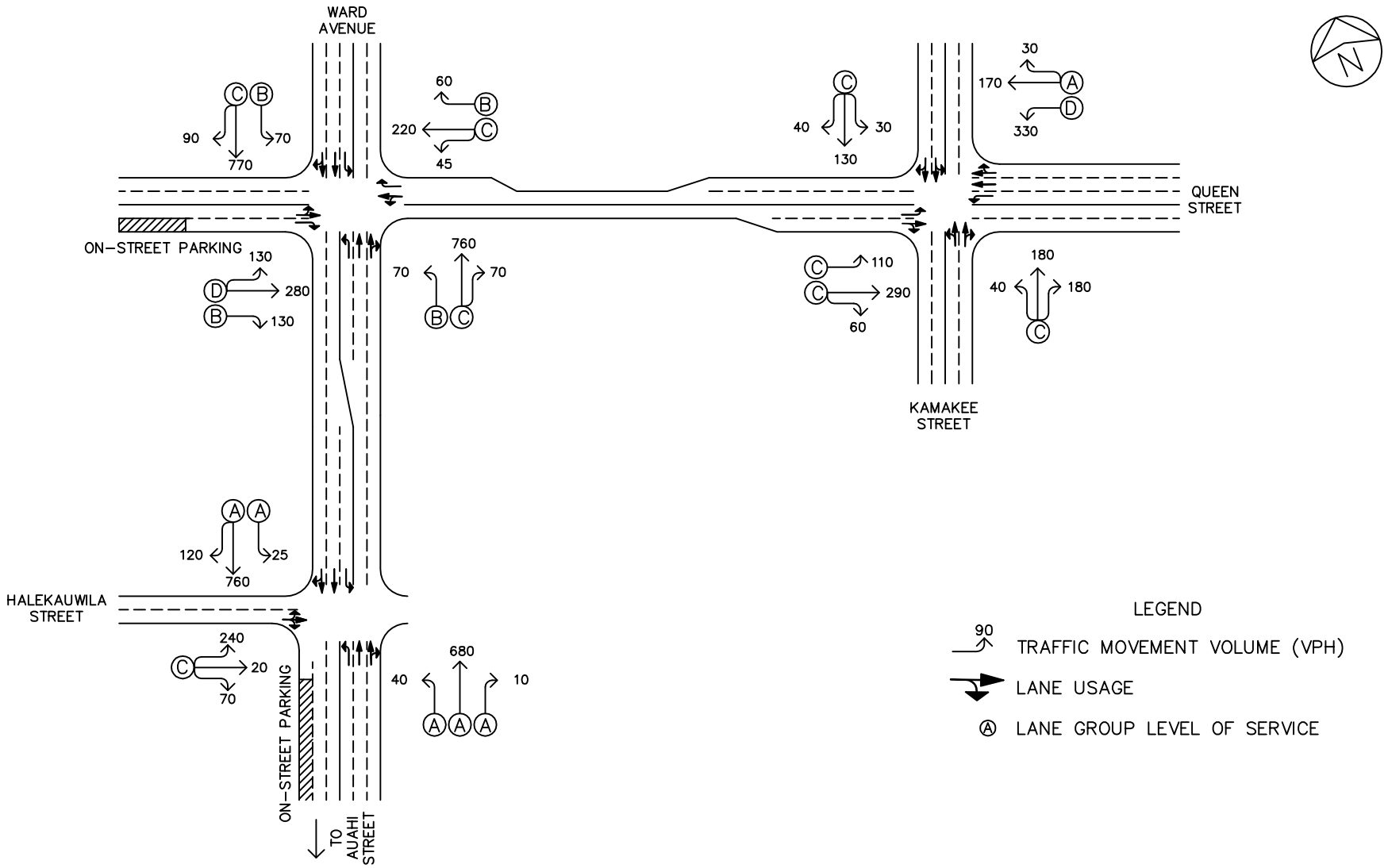
VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 10



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VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 11

Table 3: Existing and Projected (Without Project) LOS Traffic Operating Conditions (Cont'd)

Intersection	Critical Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Proj	Exist	Year 2016 w/out Proj
Kamakee St/ Auahi St	Eastbound	LT	C	C	C	C
	Westbound	TH-RT	A	B	B	B
	Northbound	TH-RT	A	A	B	B
	Southbound	LT	B	A	B	B
Kamakee St/ Queen St*	Eastbound	TH-RT	-	C	-	C
	Westbound	LT	-	C	-	D
	Northbound	LT-TH-RT	-	B	-	C
	Southbound	LT-TH-RT	-	B	-	C
Ala Moana Blvd/ Queen St	Eastbound	TH	A	A	A	A
	Westbound	TH-RT	A	A	A	A
	Southbound	LT	D	D	D	E

*Traffic signal system installed at intersection.

Under Year 2016 without project conditions, traffic operations are expected to deteriorate from existing conditions due ambient growth in traffic throughout the region. Along Ward Avenue, the southbound through and right-turn traffic movement at the intersection with Ala Moana Boulevard is expected to deteriorate from LOS "D" to LOS "E" during the AM peak period. Along Kamakee Street, the northbound left-turn and through traffic movement at the intersection with Ala Moana Boulevard is expected to deteriorate from LOS "E" to LOS "F" during the PM peak period while the westbound through and right-turn traffic movement at the intersection with Auahi Street is expected to deteriorate from LOS "A" to LOS "B" during the AM peak period. At the intersection Kamakee Street with Queen Street, the critical movements at the intersection are expected to operate at LOS "C" or better during the AM peak period and LOS "D" or better during the PM peak period. The remaining critical traffic movements at these intersections, as well as, the other study intersection are expected to operate at levels of service similar to existing conditions during the AM and PM peak periods.

D. Total Traffic Volumes With Project

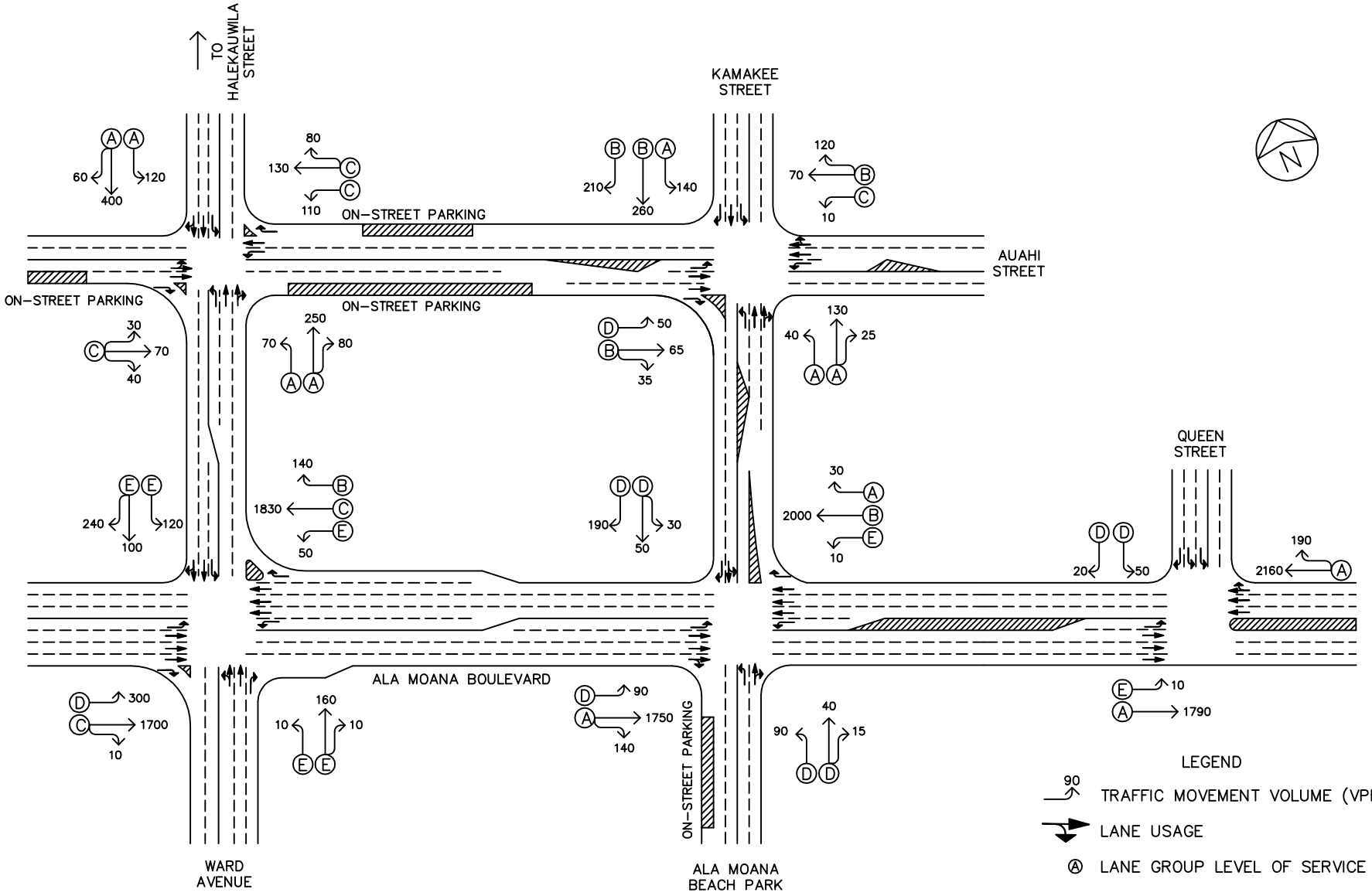
Figures 12 to 15 show the Year 2016 cumulative AM and PM peak hour traffic conditions with Phase 1A of the Victoria Ward development. The cumulative volumes consist of site- generated traffic superimposed over Year 2016 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

V. TRAFFIC IMPACT ANALYSIS

The Year 2016 cumulative AM and PM peak hour traffic conditions with Phase 1A of the Victoria Ward development are summarized in Table 4. The lane usage on the northbound approach of the Ala Moana Boulevard and Kamakee Street intersection is assumed to be modified under with project conditions to alleviate the anticipated low levels of service under without project conditions. Finally, the traffic signals along Ala Moana Boulevard and Ward Avenue are assumed to be modified to accommodate the anticipated shifts in traffic distribution as a result of the proposed project. The without project operating conditions are provided for comparison purposes. LOS calculations are included in Appendix E.

Table 4: Projected Year 2016 (Without and With Project)
LOS Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			w/out Proj	w/ Proj	w/out Proj	w/ Proj
Ala Moana Blvd/ Ward Ave	Eastbound	LT	D	D	E	E
	Westbound	TH	C	C	D	D
	Southbound	LT	E	E	E	E
		TH-RT	E	E	D	D
Ward Ave/ Auahi St	Eastbound	LT-TH-RT	C	C	C	C
	Westbound	LT	C	C	C	C
		TH-RT	C	C	C	C
	Northbound	TH-RT	A	A	A	A
	Southbound	LT	A	A	A	C



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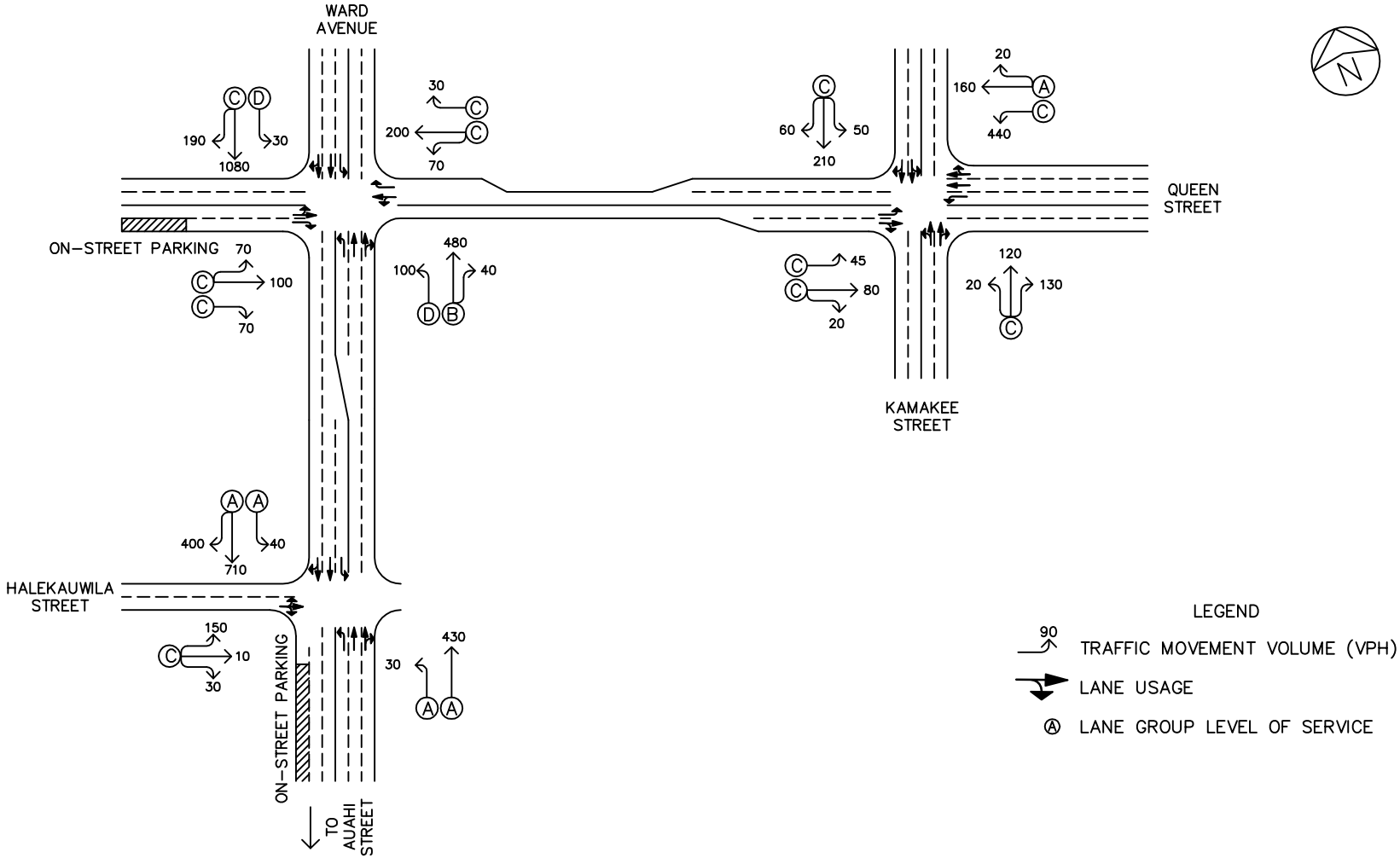
VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED AM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 12



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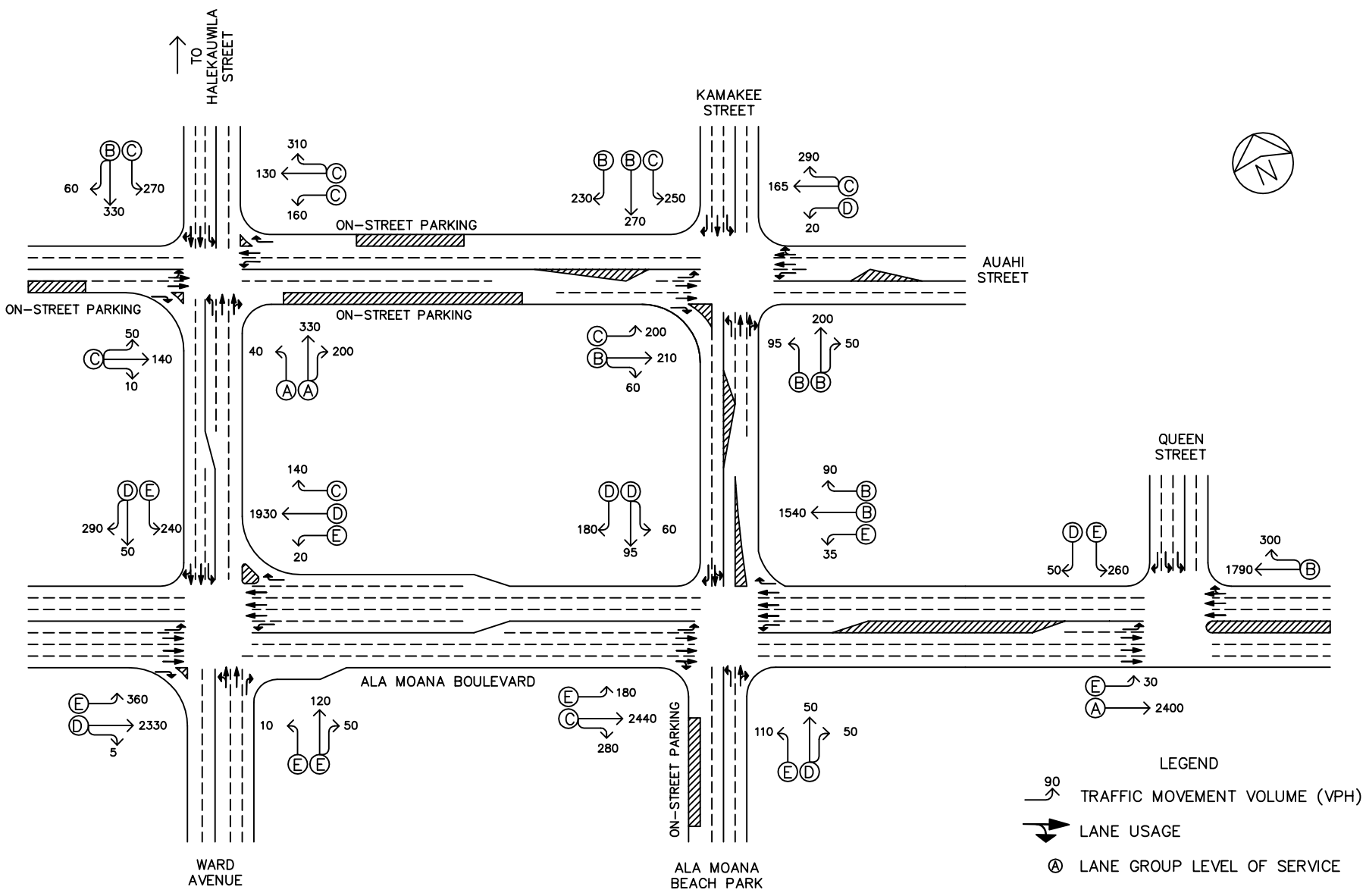
VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED AM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 13



VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 14

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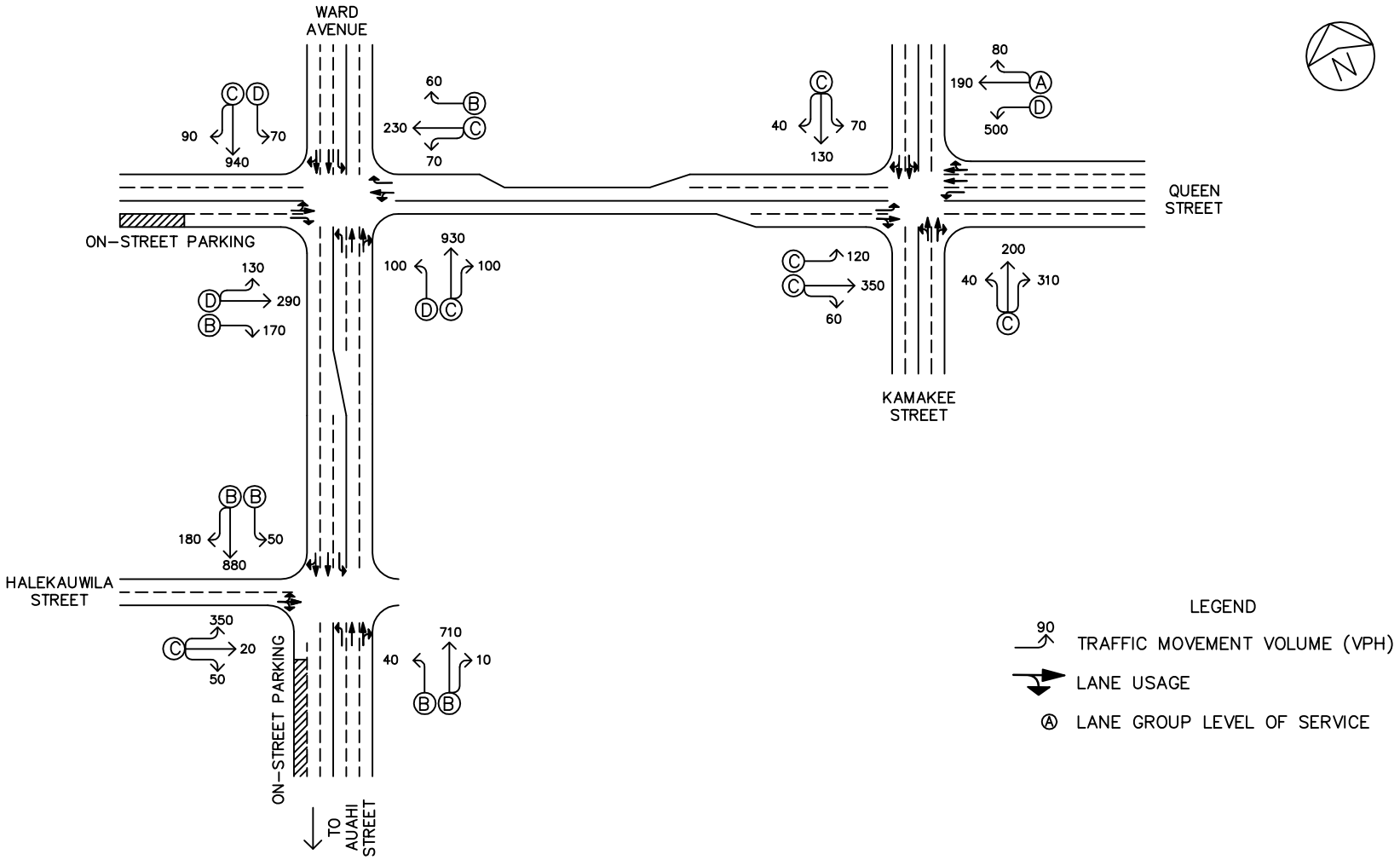

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VICTORIA WARD DEVELOPMENT - PHASE 1A

YEAR 2016 PROJECTED PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 15

Table 4: Projected Year 2016 (Without and With Project)
LOS Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			w/out Proj	w/ Proj	w/out Proj	w/ Proj
Ward Ave/ Halekauwila St	Eastbound	LT-TH-RT	C	C	C	C
	Northbound	TH-RT	A	A	A	B
	Southbound	TH-RT	A	A	A	B
Ward Ave/ Queen St	Eastbound	LT-TH	C	C	D	D
	Westbound	LT-TH	C	C	C	C
	Northbound	TH-RT	B	B	C	C
	Southbound	TH-RT	B	C	C	C
Ala Moana Blvd/ Kamakee St*	Eastbound	TH-RT	A	B	C	C
	Westbound	TH-RT	B	B	B	B
	Northbound	LT	E	D	F	E
	Southbound	RT	D	D	D	D
Kamakee St/ Auahi St	Eastbound	LT	C	C	C	C
	Westbound	TH-RT	B	B	B	C
	Northbound	TH-RT	A	A	B	B
	Southbound	LT	A	A	B	C
Kamakee St/ Queen St	Eastbound	TH-RT	C	C	C	C
	Westbound	LT	C	C	D	D
	Northbound	LT-TH-RT	B	C	C	C
	Southbound	LT-TH-RT	B	C	C	C
Ala Moana Blvd/ Queen St	Eastbound	TH	A	A	A	A
	Westbound	TH-RT	A	A	A	B
	Southbound	LT	D	D	E	E

*Modifications implemented on the northbound and westbound approaches.

Traffic operations under Year 2016 with project conditions are expected, in general, to remain similar to Year 2016 without project conditions during both peak periods due to the lane use modifications at the intersection of Ala Moana Boulevard with Kamakee Street, and the modifications to the signal timing along Ala Moana Boulevard and Ward Avenue. Along Ward Avenue, the critical movements at the intersection with Ala Moana Boulevard are expected to continue operating at LOS "E" or better while those at the intersection with Auahi Street and Halekauwila Street are expected to continue operating at LOS "C" or better during both peak periods. At the intersection with Queen Street, the critical movements are anticipated to continue operating at LOS "C" or better during the AM peak period and LOS

"D" or better during the PM peak period. Along Kamakee Street, the critical movements at the intersection with Auahi Street are expected to continue operating at LOS "C" or better during both peak periods while those at the intersection with Queen Street are expected to operate at LOS "C" or better during the AM peak period and LOS "D" or better during the PM peak period. At the intersections of Ala Moana Boulevard with Kamakee Street and Queen Street, the critical movements are expected to operate at LOS "D" or better during the AM peak period and LOS "B" or better during the PM peak period.

VI. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations associated with Phase 1A of the Victoria Ward development:

1. Provide sufficient sight distance for motorists to safely enter and exit all project driveways.

2. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.

3. Provide adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on the project site to avoid vehicle-reversing maneuvers onto adjacent public roadways.

4. Provide sufficient turning radii at all driveways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

5. Modify the lane use on the northbound approach from Ala Moana Beach Park at the intersection of Ala Moana Boulevard and Kamakee Street to provide an exclusive left-turn lane and a shared through and right-turn lane.

6. Monitor and modify (if necessary) the traffic signal timing along Ala Moana Boulevard and Ward Avenue fronting the project to ensure traffic is adequately serviced at those intersections.

VII. CONCLUSION

The project site for the Victoria Ward development currently encompasses Ward Warehouse and Ward Center, as well as the adjacent entertainment complex and surrounding commercial and office buildings. The proposed development is expected to be implemented in phases over the next 10-15 years and entail the redevelopment of most of the existing commercial, office, and industrial spaces. The first phase of the project (referred to as "Phase 1A") includes the new commercial/retail space and residential units on three of the parcels within the project site. With the implementation of the aforementioned recommendations, Phase 1A is not expected to have a significant impact on traffic operations in the project vicinity. The critical movements at the study intersections in the vicinity are expected to continue operating at levels of service similar to without project conditions. However, it should be noted that extensive redevelopment is anticipated to follow this initial phase and subsequent traffic studies are expected to be prepared as the overall development progresses ensure that appropriate measures are undertaken to mitigate the impact of these future phases.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:TU-0654, TU-0652
Counted By:MM, VL
Weather:Clear

File Name : AlaWar AM
Site Code : 00000014
Start Date : 5/2/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Ala Moana Boulevard Westbound					Ward Avenue 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	30	24	18	1	73	3	180	5	0	188	0	2	4	5	11	29	205	0	7	241	513
06:15 AM	32	23	17	0	72	12	244	7	2	265	0	7	5	3	15	39	225	0	6	270	622
06:30 AM	30	17	29	1	77	8	319	14	1	342	2	4	1	8	15	64	357	1	8	430	864
06:45 AM	37	25	43	4	109	10	324	20	6	360	1	2	2	9	14	60	349	0	2	411	894
Total	129	89	107	6	331	33	1067	46	9	1155	3	15	12	25	55	192	1136	1	23	1352	2893
07:00 AM	27	20	31	3	81	8	377	20	0	405	0	2	0	10	12	57	414	1	5	477	975
07:15 AM	29	18	50	1	98	5	455	27	4	491	1	2	1	14	18	56	390	0	4	450	1057
07:30 AM	28	19	56	3	106	21	387	41	2	451	0	6	0	15	21	80	387	1	9	477	1055
07:45 AM	22	34	63	4	123	13	468	35	4	520	0	4	2	9	15	52	375	0	2	429	1087
Total	106	91	200	11	408	47	1687	123	10	1867	1	14	3	48	66	245	1566	2	20	1833	4174
08:00 AM	36	70	48	2	156	12	285	19	6	322	3	6	2	3	14	58	326	2	2	388	880
08:15 AM	34	25	58	5	122	13	343	30	5	391	1	6	5	4	16	49	364	2	2	417	946
08:30 AM	42	22	51	3	118	5	296	28	11	340	1	5	5	8	19	54	296	5	5	360	837
08:45 AM	40	24	44	3	111	16	318	29	4	367	4	9	5	5	23	78	412	0	3	493	994
Total	152	141	201	13	507	46	1242	106	26	1420	9	26	17	20	72	239	1398	9	12	1658	3657
Grand Total	387	321	508	30	1246	126	3996	275	45	4442	13	55	32	93	193	676	4100	12	55	4843	10724
Apprch %	31.1	25.8	40.8	2.4		2.8	90	6.2	1		6.7	28.5	16.6	48.2		14	84.7	0.2	1.1		
Total %	3.6	3	4.7	0.3	11.6	1.2	37.3	2.6	0.4	41.4	0.1	0.5	0.3	0.9	1.8	6.3	38.2	0.1	0.5	45.2	

	Ward Avenue Southbound				Ala Moana Boulevard Westbound				Ward Avenue 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 07:00 AM																	
07:00 AM	27	20	31	78	8	377	20	405	0	2	0	2	57	**414**	**1**	**472**	957
07:15 AM	**29**	18	50	97	5	455	27	487	**1**	2	1	4	56	390	0	446	1034
07:30 AM	28	19	56	103	**21**	387	**41**	449	0	**6**	0	**6**	**80**	387	1	468	1026
07:45 AM	22	**34**	**63**	**119**	13	**468**	35	**516**	0	4	**2**	6	52	375	0	427	**1068**
Total Volume	106	91	200	397	47	1687	123	1857	1	14	3	18	245	1566	2	1813	4085
% App. Total	26.7	22.9	50.4		2.5	90.8	6.6		5.6	77.8	16.7		13.5	86.4	0.1		
PHF	.914	.669	.794	.834	.560	.901	.750	.900	.250	.583	.375	.750	.766	.946	.500	.960	.956

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:TU-0654, TU-0652
Counted By:MM, VL
Weather:Clear

File Name : AlaWar PM
Site Code : 00000014
Start Date : 5/2/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Ala Moana Boulevard Westbound					Ward Avenue 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	55	17	77	2	151	0	415	44	0	459	3	10	9	9	31	72	381	2	1	456	1097
03:15 PM	45	2	86	2	135	4	430	50	4	488	1	13	5	16	35	63	466	0	7	536	1194
03:30 PM	51	8	55	1	115	15	355	46	6	422	3	25	12	12	52	76	466	2	11	555	1144
03:45 PM	51	5	54	4	114	5	372	52	3	432	1	19	6	7	33	62	520	0	4	586	1165
Total	202	32	272	9	515	24	1572	192	13	1801	8	67	32	44	151	273	1833	4	23	2133	4600
04:00 PM	52	7	51	2	112	8	355	27	3	393	0	24	8	14	46	54	521	1	11	587	1138
04:15 PM	40	13	56	4	113	6	459	33	2	500	1	18	16	11	46	71	560	0	3	634	1293
04:30 PM	57	20	57	3	137	9	416	16	11	452	3	37	13	13	66	66	537	2	10	615	1270
04:45 PM	48	7	39	4	98	7	464	32	6	509	2	21	9	8	40	81	526	2	4	613	1260
Total	197	47	203	13	460	30	1694	108	22	1854	6	100	46	46	198	272	2144	5	28	2449	4961
05:00 PM	60	9	60	13	142	3	367	33	1	404	0	23	15	19	57	68	558	1	3	630	1233
05:15 PM	58	7	76	1	142	6	540	51	1	598	4	25	11	6	46	81	525	0	5	611	1397
05:30 PM	46	7	49	6	108	1	291	30	13	335	4	22	12	7	45	56	501	1	2	560	1048
05:45 PM	69	17	60	3	149	2	338	24	1	365	3	34	34	3	74	46	353	0	2	401	989
Total	233	40	245	23	541	12	1536	138	16	1702	11	104	72	35	222	251	1937	2	12	2202	4667
Grand Total	632	119	720	45	1516	66	4802	438	51	5357	25	271	150	125	571	796	5914	11	63	6784	14228
Apprch %	41.7	7.8	47.5	3		1.2	89.6	8.2	1		4.4	47.5	26.3	21.9		11.7	87.2	0.2	0.9		
Total %	4.4	0.8	5.1	0.3	10.7	0.5	33.8	3.1	0.4	37.7	0.2	1.9	1.1	0.9	4	5.6	41.6	0.1	0.4	47.7	

	Ward Avenue Southbound				Ala Moana Boulevard Westbound				Ward Avenue 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 04:30 PM																	
04:30 PM	57	**20**	57	134	**9**	416	16	441	3	**37**	13	**53**	66	537	**2**	605	1233
04:45 PM	48	7	39	94	7	464	32	503	2	21	9	32	**81**	526	2	609	1238
05:00 PM	**60**	9	60	129	3	367	33	403	0	23	**15**	38	68	**558**	1	**627**	1197
05:15 PM	58	7	**76**	**141**	6	**540**	**51**	**597**	**4**	25	11	40	**81**	525	0	606	**1384**
Total Volume	223	43	232	498	25	1787	132	1944	9	106	48	163	296	2146	5	2447	5052
% App. Total	44.8	8.6	46.6		1.3	91.9	6.8		5.5	65	29.4		12.1	87.7	0.2		
PHF	.929	.538	.763	.883	.694	.827	.647	.814	.563	.716	.800	.769	.914	.961	.625	.976	.913

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:TU-0654, TU-0652
Counted By:MM, VL
Weather:Clear

File Name : AlaWar PM U-Turns
Site Code : 00000014
Start Date : 5/2/2011
Page No : 1

Groups Printed- Unshifted

	Southbound	Ala Moana Boulevard Numbers In Left Column Indicates U-Turns Westbound					Northbound	Eastbound	
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	App. Total	Int. Total
03:00 PM	0	1	0	0	0	1	0	0	1
03:15 PM	0	1	0	0	0	1	0	0	1
03:30 PM	0	1	0	0	0	1	0	0	1
03:45 PM	0	0	0	0	0	0	0	0	0
Total	0	3	0	0	0	3	0	0	3
04:00 PM	0	0	0	0	0	0	0	0	0
04:15 PM	0	1	0	0	0	1	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	1
05:00 PM	0	2	0	0	0	2	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	2	0	0	2
Grand Total	0	6	0	0	0	6	0	0	6
Apprch %		100	0	0	0				
Total %	0	100	0	0	0	100	0	0	

	Southbound	Ala Moana Boulevard Numbers In Left Column Indicates U-Turns Westbound				Northbound	Eastbound	
Start Time	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 03:00 PM								
03:00 PM	0	1	0	0	1	0	0	1
03:15 PM	0	1	0	0	1	0	0	1
03:30 PM	0	1	0	0	1	0	0	1
03:45 PM	0	0	0	0	0	0	0	0
Total Volume	0	3	0	0	3	0	0	3
% App. Total		100	0	0				
PHF	.000	.750	.000	.000	.750	.000	.000	.750

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:3880,5677
Counted By:MM,MK
Weather:Clear

File Name : WarAuaAM
Site Code : 00000005
Start Date : 4/25/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Auahi Street Westbound					Ward Avenue Northbound					Auahi 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	3	49	7	1	60	9	2	6	4	21	3	25	11	2	41	1	0	3	3	7	129
06:15 AM	2	56	4	1	63	4	4	6	6	20	6	42	12	3	63	2	4	1	0	7	153
06:30 AM	3	70	4	2	79	7	2	9	7	25	8	62	10	1	81	2	4	3	0	9	194
06:45 AM	5	78	13	0	96	13	12	13	5	43	7	66	10	3	86	2	1	0	0	3	228
Total	13	253	28	4	298	33	20	34	22	109	24	195	43	9	271	7	9	7	3	26	704
07:00 AM	4	82	9	4	99	10	21	11	4	46	8	77	11	3	99	2	10	3	5	20	264
07:15 AM	8	72	10	1	91	12	34	12	6	64	7	57	6	3	73	4	6	3	0	13	241
07:30 AM	16	86	7	7	116	30	32	14	8	84	15	63	11	5	94	1	6	3	4	14	308
07:45 AM	10	82	23	8	123	17	24	15	3	59	18	73	9	5	105	1	6	3	1	11	298
Total	38	322	49	20	429	69	111	52	21	253	48	270	37	16	371	8	28	12	10	58	1111
08:00 AM	18	91	15	8	132	14	23	11	2	50	7	62	10	0	79	4	10	6	1	21	282
08:15 AM	16	101	13	5	135	17	25	18	8	68	10	70	15	6	101	1	5	2	2	10	314
08:30 AM	25	104	10	8	147	27	15	23	10	75	20	53	18	1	92	11	16	8	8	43	357
08:45 AM	36	80	15	15	146	20	16	15	2	53	12	49	14	4	79	9	13	12	8	42	320
Total	95	376	53	36	560	78	79	67	22	246	49	234	57	11	351	25	44	28	19	116	1273
Grand Total	146	951	130	60	1287	180	210	153	65	608	121	699	137	36	993	40	81	47	32	200	3088
Apprch %	11.3	73.9	10.1	4.7		29.6	34.5	25.2	10.7		12.2	70.4	13.8	3.6		20	40.5	23.5	16		
Total %	4.7	30.8	4.2	1.9	41.7	5.8	6.8	5	2.1	19.7	3.9	22.6	4.4	1.2	32.2	1.3	2.6	1.5	1	6.5	

	Ward Avenue Southbound				Auahi Street Westbound				Ward Avenue Northbound				Auahi 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 08:00 AM																	
08:00 AM	18	91	**15**	124	14	23	11	48	7	62	10	79	4	10	6	20	271
08:15 AM	16	101	13	130	17	**25**	18	60	10	**70**	15	**95**	1	5	2	8	293
08:30 AM	25	**104**	10	**139**	**27**	15	**23**	**65**	**20**	53	**18**	91	**11**	**16**	8	**35**	**330**
08:45 AM	**36**	80	15	131	20	16	15	51	12	49	14	75	9	13	**12**	34	291
Total Volume	95	376	53	524	78	79	67	224	49	234	57	340	25	44	28	97	1185
% App. Total	18.1	71.8	10.1		34.8	35.3	29.9		14.4	68.8	16.8		25.8	45.4	28.9		
PHF	.660	.904	.883	.942	.722	.790	.728	.862	.613	.836	.792	.895	.568	.688	.583	.693	.898

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:3880,5677
Counted By:MM,MK
Weather:Clear

File Name : WarAuaPM
Site Code : 00000005
Start Date : 4/25/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Auahi Street Westbound					Ward Avenue Northbound					Auahi 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	104	2	0	142	31	21	52	27	131	13	68	16	3	100	1	16	4	0	21	394
03:15 PM	37	72	13	1	123	18	40	34	11	103	7	51	29	6	93	8	28	7	0	43	362
03:30 PM	29	100	20	7	156	32	19	53	8	112	4	58	19	1	82	8	14	0	0	22	372
03:45 PM	28	75	13	0	116	19	28	67	25	139	11	72	21	4	108	4	15	1	0	20	383
Total	130	351	48	8	537	100	108	206	71	485	35	249	85	14	383	21	73	12	0	106	1511
04:00 PM	33	94	6	14	147	26	26	51	9	112	5	63	23	0	91	12	13	2	5	32	382
04:15 PM	35	61	10	5	111	14	16	54	12	96	0	89	26	0	115	4	19	0	2	25	347
04:30 PM	42	75	11	4	132	32	16	69	20	137	6	68	38	3	115	14	20	0	2	36	420
04:45 PM	51	70	13	5	139	30	21	67	7	125	12	80	36	4	132	17	22	0	2	41	437
Total	161	300	40	28	529	102	79	241	48	470	23	300	123	7	453	47	74	2	11	134	1586
05:00 PM	48	89	7	7	151	18	22	63	11	114	3	92	21	5	121	11	27	2	10	50	436
05:15 PM	51	84	14	11	160	26	21	60	7	114	5	70	30	4	109	7	19	4	4	34	417
05:30 PM	61	80	9	10	160	22	9	51	7	89	8	87	41	6	142	9	17	3	13	42	433
05:45 PM	46	80	12	17	155	19	31	48	6	104	6	45	23	7	81	9	13	3	1	26	366
Total	206	333	42	45	626	85	83	222	31	421	22	294	115	22	453	36	76	12	28	152	1652
Grand Total	497	984	130	81	1692	287	270	669	150	1376	80	843	323	43	1289	104	223	26	39	392	4749
Apprch %	29.4	58.2	7.7	4.8		20.9	19.6	48.6	10.9		6.2	65.4	25.1	3.3		26.5	56.9	6.6	9.9		
Total %	10.5	20.7	2.7	1.7	35.6	6	5.7	14.1	3.2	29	1.7	17.8	6.8	0.9	27.1	2.2	4.7	0.5	0.8	8.3	

	Ward Avenue Southbound				Auahi Street Westbound				Ward Avenue Northbound				Auahi 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	51	70	13	134	**30**	21	**67**	**118**	**12**	80	36	128	**17**	22	0	39	**419**
05:00 PM	48	**89**	7	144	18	**22**	63	103	3	**92**	21	116	11	**27**	2	**40**	403
05:15 PM	51	84	**14**	149	26	21	60	107	5	70	30	105	7	19	**4**	30	391
05:30 PM	**61**	80	9	**150**	22	9	51	82	8	87	**41**	**136**	9	17	3	29	397
Total Volume	211	323	43	577	96	73	241	410	28	329	128	485	44	85	9	138	1610
% App. Total	36.6	56	7.5		23.4	17.8	58.8		5.8	67.8	26.4		31.9	61.6	6.5		
PHF	.865	.907	.768	.962	.800	.830	.899	.869	.583	.894	.780	.892	.647	.787	.563	.863	.961

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5674,5673
Counted By:DY,MH
Weather:Clear

File Name : WarHalAM
Site Code : 00000001
Start Date : 4/25/2011

Groups Printed- Unshifted

	Ward Avenue Southbound					Westbound	Ward Avenue Northbound					Halekauwila 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	79	17	0	96	0	3	27	0	1	31	5	2	3	3	13	140
06:15 AM	0	81	24	0	105	0	6	38	0	1	45	5	1	4	2	12	162
06:30 AM	1	98	32	0	131	0	8	77	0	0	85	4	3	8	2	17	233
06:45 AM	4	122	46	0	172	0	14	65	0	0	79	11	2	6	11	30	281
Total	5	380	119	0	504	0	31	207	0	2	240	25	8	21	18	72	816
07:00 AM	4	111	40	0	155	0	13	93	0	0	106	10	2	7	8	27	288
07:15 AM	6	131	68	0	205	0	9	100	0	0	109	27	7	12	5	51	365
07:30 AM	5	149	68	0	222	0	8	90	0	0	98	28	3	10	3	44	364
07:45 AM	2	145	75	0	222	0	14	97	0	1	112	14	5	6	8	33	367
Total	17	536	251	0	804	0	44	380	0	1	425	79	17	35	24	155	1384
08:00 AM	4	154	64	0	222	0	9	89	0	0	98	31	3	10	6	50	370
08:15 AM	2	143	55	0	200	0	4	87	0	0	91	19	6	7	8	40	331
08:30 AM	2	155	30	0	187	0	1	95	1	0	97	32	1	7	12	52	336
08:45 AM	3	168	45	0	216	0	4	70	1	0	75	25	4	11	6	46	337
Total	11	620	194	0	825	0	18	341	2	0	361	107	14	35	32	188	1374
Grand Total	33	1536	564	0	2133	0	93	928	2	3	1026	211	39	91	74	415	3574
Apprch %	1.5	72	26.4	0			9.1	90.4	0.2	0.3		50.8	9.4	21.9	17.8		
Total %	0.9	43	15.8	0	59.7	0	2.6	26	0.1	0.1	28.7	5.9	1.1	2.5	2.1	11.6	

	Ward Avenue Southbound				Westbound	Ward Avenue Northbound				Halekauwila 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	**6**	131	68	205	0	9	**100**	0	109	27	**7**	**12**	**46**	360
07:30 AM	5	149	68	**222**	0	8	90	0	98	28	3	10	41	361
07:45 AM	2	145	**75**	222	0	**14**	97	0	**111**	14	5	6	25	358
08:00 AM	4	**154**	64	222	0	9	89	0	98	**31**	3	10	44	**364**
Total Volume	17	579	275	871	0	40	376	0	416	100	18	38	156	1443
% App. Total	2	66.5	31.6			9.6	90.4	0		64.1	11.5	24.4		
PHF	.708	.940	.917	.981	.000	.714	.940	.000	.937	.806	.643	.792	.848	.991

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5674,5673
Counted By:DY,MH
Weather:Clear

File Name : WarHalPM
Site Code : 00000001
Start Date : 4/25/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Westbound	Ward Avenue Northbound					Halekauwila 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	8	160	29	0	197	0	5	141	2	4	152	37	7	20	3	67	416
03:15 PM	7	150	21	0	178	0	11	122	5	1	139	38	4	12	3	57	374
03:30 PM	10	177	23	0	210	0	7	141	3	3	154	48	8	5	7	68	432
03:45 PM	8	149	26	0	183	0	6	149	4	6	165	45	1	15	10	71	419
Total	33	636	99	0	768	0	29	553	14	14	610	168	20	52	23	263	1641
04:00 PM	11	150	18	0	179	0	10	144	2	0	156	69	5	9	17	100	435
04:15 PM	9	158	33	0	200	0	13	158	3	0	174	50	3	12	13	78	452
04:30 PM	6	154	20	0	180	0	6	161	1	0	168	62	4	13	12	91	439
04:45 PM	7	168	37	0	212	0	13	143	6	0	162	61	8	18	7	94	468
Total	33	630	108	0	771	0	42	606	12	0	660	242	20	52	49	363	1794
05:00 PM	4	173	26	0	203	0	10	167	1	1	179	70	6	17	15	108	490
05:15 PM	5	181	29	0	215	0	5	155	2	6	168	53	3	21	29	106	489
05:30 PM	5	180	27	0	212	0	4	157	1	0	162	56	3	11	10	80	454
05:45 PM	3	153	13	0	169	0	4	116	3	0	123	41	4	11	18	74	366
Total	17	687	95	0	799	0	23	595	7	7	632	220	16	60	72	368	1799
Grand Total	83	1953	302	0	2338	0	94	1754	33	21	1902	630	56	164	144	994	5234
Apprch %	3.6	83.5	12.9	0			4.9	92.2	1.7	1.1		63.4	5.6	16.5	14.5		
Total %	1.6	37.3	5.8	0	44.7	0	1.8	33.5	0.6	0.4	36.3	12	1.1	3.1	2.8	19	

	Ward Avenue Southbound				Westbound	Ward Avenue Northbound				Halekauwila 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	**7**	168	**37**	212	0	**13**	143	**6**	162	61	**8**	18	87	461
05:00 PM	4	173	26	203	0	10	**167**	1	**178**	**70**	6	17	**93**	**474**
05:15 PM	5	**181**	29	**215**	0	5	155	2	162	53	3	**21**	77	454
05:30 PM	5	180	27	212	0	4	157	1	162	56	3	11	70	444
Total Volume	21	702	119	842	0	32	622	10	664	240	20	67	327	1833
% App. Total	2.5	83.4	14.1			4.8	93.7	1.5		73.4	6.1	20.5		
PHF	.750	.970	.804	.979	.000	.615	.931	.417	.933	.857	.625	.798	.879	.967

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:1841,5672
Counted By:GC,CA
Weather:Clear

File Name : WarQueAM
Site Code : 00000003
Start Date : 4/26/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Queen Street Westbound					Ward Avenue Northbound					Queen 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	8	99	16	0	123	1	9	4	12	26	2	41	6	0	49	5	6	4	2	17	215
06:15 AM	6	107	14	0	127	4	8	5	6	23	2	42	5	0	49	3	6	7	4	20	219
06:30 AM	1	141	28	2	172	2	13	0	5	20	6	62	8	0	76	5	8	6	4	23	291
06:45 AM	6	146	39	3	194	4	25	6	6	41	6	69	9	0	84	2	11	11	11	35	354
Total	21	493	97	5	616	11	55	15	29	110	16	214	28	0	258	15	31	28	21	95	1079
07:00 AM	7	187	49	4	247	3	42	8	2	55	17	84	4	0	105	4	24	6	12	46	453
07:15 AM	3	167	68	3	241	12	51	7	8	78	13	116	8	3	140	11	21	18	8	58	517
07:30 AM	4	184	50	0	238	17	54	8	8	87	17	106	11	1	135	20	22	9	3	54	514
07:45 AM	12	203	65	1	281	7	56	8	10	81	24	85	5	3	117	10	22	9	10	51	530
Total	26	741	232	8	1007	39	203	31	28	301	71	391	28	7	497	45	89	42	33	209	2014
08:00 AM	4	217	39	1	261	17	35	5	6	63	10	89	5	1	105	21	19	18	5	63	492
08:15 AM	10	220	37	3	270	6	40	7	8	61	13	94	10	1	118	15	31	16	2	64	513
08:30 AM	8	194	37	1	240	14	38	10	13	75	8	94	7	6	115	19	38	8	7	72	502
08:45 AM	10	191	31	4	236	9	27	8	14	58	19	100	8	5	132	21	33	19	2	75	501
Total	32	822	144	9	1007	46	140	30	41	257	50	377	30	13	470	76	121	61	16	274	2008
Grand Total	79	2056	473	22	2630	96	398	76	98	668	137	982	86	20	1225	136	241	131	70	578	5101
Apprch %	3	78.2	18	0.8		14.4	59.6	11.4	14.7		11.2	80.2	7	1.6		23.5	41.7	22.7	12.1		
Total %	1.5	40.3	9.3	0.4	51.6	1.9	7.8	1.5	1.9	13.1	2.7	19.3	1.7	0.4	24	2.7	4.7	2.6	1.4	11.3	

	Ward Avenue Southbound				Queen Street Westbound				Ward Avenue Northbound				Queen 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 07:30 AM																	
07:30 AM	4	184	50	238	**17**	54	**8**	**79**	17	**106**	**11**	**134**	20	22	9	51	502
07:45 AM	**12**	203	**65**	**280**	7	**56**	8	71	**24**	85	5	114	10	22	9	41	**506**
08:00 AM	4	217	39	260	17	35	5	57	10	89	5	104	**21**	19	**18**	58	479
08:15 AM	10	**220**	37	267	6	40	7	53	13	94	10	117	15	**31**	16	**62**	499
Total Volume	30	824	191	1045	47	185	28	260	64	374	31	469	66	94	52	212	1986
% App. Total	2.9	78.9	18.3		18.1	71.2	10.8		13.6	79.7	6.6		31.1	44.3	24.5		
PHF	.625	.936	.735	.933	.691	.826	.875	.823	.667	.882	.705	.875	.786	.758	.722	.855	.981

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:1841,5672
Counted By:GC,CA
Weather:Clear

File Name : WarQuePM
Site Code : 00000003
Start Date : 4/26/2011
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Queen Street Westbound					Ward Avenue Northbound					Queen 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	9	188	24	4	225	10	43	16	11	80	18	146	8	8	180	17	36	22	4	79	564
03:15 PM	16	181	26	4	227	11	38	21	12	82	12	166	9	6	193	19	41	21	4	85	587
03:30 PM	12	169	25	2	208	11	41	10	22	84	23	177	5	9	214	25	49	27	9	110	616
03:45 PM	14	173	22	3	212	11	38	27	15	91	16	186	9	4	215	26	39	22	12	99	617
Total	51	711	97	13	872	43	160	74	60	337	69	675	31	27	802	87	165	92	29	373	2384
04:00 PM	12	140	16	2	170	2	46	18	7	73	25	177	13	0	215	31	40	28	4	103	561
04:15 PM	12	150	23	7	192	7	37	17	11	72	13	159	19	5	196	20	46	21	6	93	553
04:30 PM	11	168	17	6	202	16	46	5	9	76	17	189	29	3	238	33	63	21	5	122	638
04:45 PM	16	180	18	1	215	13	45	19	9	86	14	156	20	0	190	41	68	33	7	149	640
Total	51	638	74	16	779	38	174	59	36	307	69	681	81	8	839	125	217	103	22	467	2392
05:00 PM	20	202	21	3	246	12	60	13	14	99	15	205	15	2	237	34	67	26	3	130	712
05:15 PM	16	168	17	4	205	12	72	14	11	109	14	163	14	6	197	33	67	36	14	150	661
05:30 PM	18	178	33	7	236	6	44	11	15	76	24	193	19	3	239	22	77	28	7	134	685
05:45 PM	17	195	26	1	239	11	45	8	9	73	17	139	16	2	174	26	50	17	2	95	581
Total	71	743	97	15	926	41	221	46	49	357	70	700	64	13	847	115	261	107	26	509	2639
Grand Total	173	2092	268	44	2577	122	555	179	145	1001	208	2056	176	48	2488	327	643	302	77	1349	7415
Apprch %	6.7	81.2	10.4	1.7		12.2	55.4	17.9	14.5		8.4	82.6	7.1	1.9		24.2	47.7	22.4	5.7		
Total %	2.3	28.2	3.6	0.6	34.8	1.6	7.5	2.4	2	13.5	2.8	27.7	2.4	0.6	33.6	4.4	8.7	4.1	1	18.2	

	Ward Avenue Southbound				Queen Street Westbound				Ward Avenue Northbound				Queen 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	16	180	18	214	**13**	45	**19**	77	14	156	**20**	190	**41**	68	33	**142**	623
05:00 PM	**20**	**202**	21	**243**	12	60	13	85	15	**205**	15	235	34	67	26	127	**690**
05:15 PM	16	168	17	201	12	**72**	14	**98**	14	163	14	191	33	67	**36**	136	626
05:30 PM	18	178	**33**	229	6	44	11	61	**24**	193	19	**236**	22	**77**	28	127	653
Total Volume	70	728	89	887	43	221	57	321	67	717	68	852	130	279	123	532	2592
% App. Total	7.9	82.1	10		13.4	68.8	17.8		7.9	84.2	8		24.4	52.4	23.1		
PHF	.875	.901	.674	.913	.827	.767	.750	.819	.698	.874	.850	.903	.793	.906	.854	.937	.939

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:1839,3888
Counted By:GC,CA
Weather:Clear

File Name : AlaKamAM
Site Code : 00000003
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Ala Moana Blvd. Westbound					Ala Moana Park Drive Northbound					Ala Moana Blvd. 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	14	16	8	39	2	200	2	10	214	6	3	1	5	15	5	183	34	0	222	490
06:15 AM	0	14	16	17	47	1	236	4	20	261	4	5	1	3	13	4	243	22	0	269	590
06:30 AM	2	8	23	8	41	2	292	7	13	314	18	5	4	6	33	7	309	44	0	360	748
06:45 AM	1	6	20	4	31	2	356	5	6	369	15	2	1	6	24	8	344	28	0	380	804
Total	4	42	75	37	158	7	1084	18	49	1158	43	15	7	20	85	24	1079	128	0	1231	2632
07:00 AM	5	8	35	6	54	3	418	4	5	430	16	4	8	5	33	17	357	34	0	408	925
07:15 AM	4	11	22	3	40	1	446	6	11	464	33	8	3	3	47	14	430	24	0	468	1019
07:30 AM	6	14	33	2	55	1	579	4	5	589	16	11	3	0	30	12	373	43	0	428	1102
07:45 AM	6	15	37	9	67	0	380	7	19	406	19	9	2	8	38	21	357	34	0	412	923
Total	21	48	127	20	216	5	1823	21	40	1889	84	32	16	16	148	64	1517	135	0	1716	3969
08:00 AM	9	10	44	1	64	4	395	5	12	416	21	8	6	10	45	14	395	36	0	445	970
08:15 AM	9	13	28	2	52	6	425	7	6	444	16	9	6	5	36	23	342	36	0	401	933
08:30 AM	3	8	21	2	34	0	344	3	11	358	19	20	7	5	51	12	364	33	0	409	852
08:45 AM	2	6	25	0	33	2	320	3	0	325	21	16	1	4	42	32	347	40	0	419	819
Total	23	37	118	5	183	12	1484	18	29	1543	77	53	20	24	174	81	1448	145	0	1674	3574
Grand Total	48	127	320	62	557	24	4391	57	118	4590	204	100	43	60	407	169	4044	408	0	4621	10175
Apprch %	8.6	22.8	57.5	11.1		0.5	95.7	1.2	2.6		50.1	24.6	10.6	14.7		3.7	87.5	8.8	0		
Total %	0.5	1.2	3.1	0.6	5.5	0.2	43.2	0.6	1.2	45.1	2	1	0.4	0.6	4	1.7	39.7	4	0	45.4	

	Kamakee Street Southbound				Ala Moana Blvd. Westbound				Ala Moana Park Drive Northbound				Ala Moana Blvd. 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	4	11	22	37	1	446	6	453	**33**	8	3	**44**	14	**430**	24	**468**	1002
07:30 AM	6	14	33	53	1	**579**	4	**584**	16	**11**	3	30	12	373	**43**	428	**1095**
07:45 AM	6	**15**	37	58	0	380	**7**	387	19	9	2	30	**21**	357	34	412	887
08:00 AM	**9**	10	**44**	**63**	**4**	395	5	404	21	8	**6**	35	14	395	36	445	947
Total Volume	25	50	136	211	6	1800	22	1828	89	36	14	139	61	1555	137	1753	3931
% App. Total	11.8	23.7	64.5		0.3	98.5	1.2		64	25.9	10.1		3.5	88.7	7.8		
PHF	.694	.833	.773	.837	.375	.777	.786	.783	.674	.818	.583	.790	.726	.904	.797	.936	.897

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:1839,3888
Counted By:GC,CA
Weather:Clear

File Name : AlaKamPM
Site Code : 00000003
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Ala Moana Blvd. Westbound					Ala Moana Park Drive Northbound					Ala Moana Blvd. 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	10	39	7	71	3	364	17	5	389	31	10	12	7	60	17	443	56	0	516	1036
03:15 PM	14	11	26	7	58	5	375	6	13	399	16	16	1	9	42	31	507	44	0	582	1081
03:30 PM	16	8	36	3	63	5	322	15	14	356	15	13	11	4	43	31	516	40	0	587	1049
03:45 PM	16	7	32	10	65	3	334	15	13	365	24	11	4	7	46	29	512	59	0	600	1076
Total	61	36	133	27	257	16	1395	53	45	1509	86	50	28	27	191	108	1978	199	0	2285	4242
04:00 PM	16	15	42	17	90	6	354	10	7	377	29	16	7	9	61	31	478	52	0	561	1089
04:15 PM	23	17	34	13	87	1	411	11	15	438	17	12	6	3	38	20	559	67	0	646	1209
04:30 PM	11	18	24	6	59	8	330	13	12	363	30	17	10	6	63	23	517	57	0	597	1082
04:45 PM	7	21	30	12	70	11	373	10	14	408	18	18	4	8	48	34	563	54	0	651	1177
Total	57	71	130	48	306	26	1468	44	48	1586	94	63	27	26	210	108	2117	230	0	2455	4557
05:00 PM	11	20	33	20	84	8	348	21	30	407	25	8	14	12	59	27	503	81	0	611	1161
05:15 PM	13	25	28	22	88	5	347	19	21	392	31	16	15	16	78	33	551	75	0	659	1217
05:30 PM	12	25	30	16	83	8	320	22	20	370	33	7	15	18	73	26	551	64	0	641	1167
05:45 PM	8	21	42	23	94	7	292	22	22	343	33	19	17	10	79	43	524	51	0	618	1134
Total	44	91	133	81	349	28	1307	84	93	1512	122	50	61	56	289	129	2129	271	0	2529	4679
Grand Total	162	198	396	156	912	70	4170	181	186	4607	302	163	116	109	690	345	6224	700	0	7269	13478
Apprch %	17.8	21.7	43.4	17.1		1.5	90.5	3.9	4		43.8	23.6	16.8	15.8		4.7	85.6	9.6	0		
Total %	1.2	1.5	2.9	1.2	6.8	0.5	30.9	1.3	1.4	34.2	2.2	1.2	0.9	0.8	5.1	2.6	46.2	5.2	0	53.9	

	Kamakee Street Southbound				Ala Moana Blvd. Westbound				Ala Moana Park Drive Northbound				Ala Moana Blvd. 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	7	21	30	58	**11**	**373**	10	**394**	18	**18**	4	40	**34**	**563**	54	651	1143
05:00 PM	11	20	**33**	64	8	348	21	377	25	8	14	47	27	503	**81**	611	1099
05:15 PM	**13**	**25**	28	66	5	347	19	371	31	16	**15**	**62**	33	551	75	**659**	**1158**
05:30 PM	12	25	30	**67**	8	320	**22**	350	**33**	7	15	55	26	551	64	641	1113
Total Volume	43	91	121	255	32	1388	72	1492	107	49	48	204	120	2168	274	2562	4513
% App. Total	16.9	35.7	47.5		2.1	93	4.8		52.5	24	23.5		4.7	84.6	10.7		
PHF	.827	.910	.917	.951	.727	.930	.818	.947	.811	.681	.800	.823	.882	.963	.846	.972	.974

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:3890,3891
Counted By:EM,SM
Weather:Clear

File Name : KamAuaAM
Site Code : 00000004
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Auahi Street Westbound					Kamakee Street Northbound					Auahi 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	26	9	2	38	0	6	6	5	17	2	10	0	3	15	3	7	5	2	17	87
06:15 AM	1	28	8	2	39	0	4	5	7	16	5	10	2	10	27	3	3	4	8	18	100
06:30 AM	1	29	19	4	53	0	10	7	7	24	6	14	0	8	28	7	7	4	2	20	125
06:45 AM	3	25	24	3	55	1	10	7	11	29	7	11	1	5	24	8	5	2	5	20	128
Total	6	108	60	11	185	1	30	25	30	86	20	45	3	26	94	21	22	15	17	75	440
07:00 AM	2	45	13	8	68	0	16	11	3	30	2	19	1	0	22	5	11	2	3	21	141
07:15 AM	11	37	40	5	93	0	10	9	8	27	8	23	0	4	35	4	2	4	10	20	175
07:30 AM	12	42	36	4	94	0	23	16	5	44	11	17	5	5	38	5	19	13	0	37	213
07:45 AM	21	45	34	1	101	4	18	12	9	43	9	26	4	5	44	7	14	5	5	31	219
Total	46	169	123	18	356	4	67	48	25	144	30	85	10	14	139	21	46	24	18	109	748
08:00 AM	11	53	29	7	100	3	12	12	7	34	11	17	7	3	38	8	15	8	8	39	211
08:15 AM	12	38	40	5	95	5	20	15	3	43	5	33	6	4	48	7	13	6	7	33	219
08:30 AM	12	24	25	7	68	1	24	10	10	45	16	22	5	7	50	14	14	6	4	38	201
08:45 AM	15	27	23	8	73	1	23	18	7	49	19	36	10	10	75	12	26	5	5	48	245
Total	50	142	117	27	336	10	79	55	27	171	51	108	28	24	211	41	68	25	24	158	876
Grand Total	102	419	300	56	877	15	176	128	82	401	101	238	41	64	444	83	136	64	59	342	2064
Apprch %	11.6	47.8	34.2	6.4		3.7	43.9	31.9	20.4		22.7	53.6	9.2	14.4		24.3	39.8	18.7	17.3		
Total %	4.9	20.3	14.5	2.7	42.5	0.7	8.5	6.2	4	19.4	4.9	11.5	2	3.1	21.5	4	6.6	3.1	2.9	16.6	

	Kamakee Street Southbound				Auahi Street Westbound				Kamakee Street Northbound				Auahi 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 07:30 AM																	
07:30 AM	12	42	36	90	0	**23**	**16**	39	**11**	17	5	33	5	**19**	**13**	**37**	199
07:45 AM	**21**	45	34	**100**	4	18	12	34	9	26	4	39	7	14	5	26	199
08:00 AM	11	**53**	29	93	3	12	12	27	11	17	**7**	35	**8**	15	8	31	186
08:15 AM	12	38	**40**	90	**5**	20	15	**40**	5	**33**	6	**44**	7	13	6	26	**200**
Total Volume	56	178	139	373	12	73	55	140	36	93	22	151	27	61	32	120	784
% App. Total	15	47.7	37.3		8.6	52.1	39.3		23.8	61.6	14.6		22.5	50.8	26.7		
PHF	.667	.840	.869	.933	.600	.793	.859	.875	.818	.705	.786	.858	.844	.803	.615	.811	.980

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:3890,3891
Counted By:EM,SM
Weather:Clear

File Name : KamAuaPM
Site Code : 00000004
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Auahi Street Westbound					Kamakee Street Northbound					Auahi 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	18	46	34	12	110	2	36	27	23	88	19	25	9	35	88	29	34	10	19	92	378
03:15 PM	18	41	36	23	118	5	25	31	26	87	16	34	9	43	102	25	26	20	22	93	400
03:30 PM	28	35	46	22	131	5	47	22	22	96	16	40	6	52	114	29	46	12	19	106	447
03:45 PM	20	35	32	31	118	4	44	30	31	109	15	36	10	38	99	32	62	21	18	133	459
Total	84	157	148	88	477	16	152	110	102	380	66	135	34	168	403	115	168	63	78	424	1684
04:00 PM	15	53	35	15	118	2	40	25	15	82	12	44	4	54	114	29	32	15	18	94	408
04:15 PM	17	58	27	15	117	8	48	39	16	111	16	28	10	36	90	28	49	12	15	104	422
04:30 PM	16	32	32	17	97	0	36	29	9	74	7	28	6	47	88	48	44	18	27	137	396
04:45 PM	20	40	37	22	119	6	28	26	31	91	20	48	12	23	103	31	54	12	6	103	416
Total	68	183	131	69	451	16	152	119	71	358	55	148	32	160	395	136	179	57	66	438	1642
05:00 PM	16	46	38	34	134	4	43	32	26	105	11	32	10	28	81	45	53	15	14	127	447
05:15 PM	28	48	36	27	139	4	50	25	23	102	27	39	11	35	112	25	45	20	15	105	458
05:30 PM	30	46	26	17	119	4	36	43	23	106	22	29	10	61	122	37	60	10	26	133	480
05:45 PM	21	48	50	40	159	3	32	36	31	102	32	32	13	49	126	29	45	14	37	125	512
Total	95	188	150	118	551	15	161	136	103	415	92	132	44	173	441	136	203	59	92	490	1897
Grand Total	247	528	429	275	1479	47	465	365	276	1153	213	415	110	501	1239	387	550	179	236	1352	5223
Apprch %	16.7	35.7	29	18.6		4.1	40.3	31.7	23.9		17.2	33.5	8.9	40.4		28.6	40.7	13.2	17.5		
Total %	4.7	10.1	8.2	5.3	28.3	0.9	8.9	7	5.3	22.1	4.1	7.9	2.1	9.6	23.7	7.4	10.5	3.4	4.5	25.9	

	Kamakee Street Southbound				Auahi Street Westbound				Kamakee Street Northbound				Auahi 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 05:00 PM																	
05:00 PM	16	46	38	100	**4**	43	32	79	11	32	10	53	**45**	53	15	**113**	345
05:15 PM	28	**48**	36	112	4	**50**	25	79	27	**39**	11	**77**	25	45	**20**	90	**358**
05:30 PM	**30**	46	26	102	4	36	**43**	**83**	22	29	10	61	37	**60**	10	107	353
05:45 PM	21	48	**50**	**119**	3	32	36	71	**32**	32	**13**	77	29	45	14	88	355
Total Volume	95	188	150	433	15	161	136	312	92	132	44	268	136	203	59	398	1411
% App. Total	21.9	43.4	34.6		4.8	51.6	43.6		34.3	49.3	16.4		34.2	51	14.8		
PHF	.792	.979	.750	.910	.938	.805	.791	.940	.719	.846	.846	.870	.756	.846	.738	.881	.985

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5677,5676
Counted By:PA,BO
Weather:Clear

File Name : KamQueAM
Site Code : 00000002
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Queen Street Westbound					Kamakee Street Northbound					Queen 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	15	3	1	20	18	4	0	2	24	0	11	2	3	16	1	6	1	7	15	75
06:15 AM	2	20	7	0	29	23	11	0	5	39	3	11	6	2	22	1	5	5	6	17	107
06:30 AM	1	22	10	1	34	28	12	1	6	47	3	6	8	1	18	5	8	2	6	21	120
06:45 AM	3	28	10	0	41	33	20	3	6	62	1	20	3	4	28	2	9	1	5	17	148
Total	7	85	30	2	124	102	47	4	19	172	7	48	19	10	84	9	28	9	24	70	450
07:00 AM	3	39	18	3	63	29	20	3	4	56	3	21	10	2	36	7	11	1	3	22	177
07:15 AM	8	35	20	6	69	54	28	3	12	97	2	15	6	0	23	4	8	2	5	19	208
07:30 AM	2	36	14	1	53	55	34	2	3	94	5	19	16	2	42	17	13	2	4	36	225
07:45 AM	5	50	23	4	82	56	42	2	9	109	3	28	12	2	45	8	20	4	5	37	273
Total	18	160	75	14	267	194	124	10	28	356	13	83	44	6	146	36	52	9	17	114	883
08:00 AM	4	50	17	1	72	51	34	0	6	91	4	18	15	0	37	8	24	3	6	41	241
08:15 AM	4	45	10	4	63	46	15	1	1	63	4	28	14	0	46	8	12	7	3	30	202
08:30 AM	5	28	23	1	57	39	24	4	7	74	4	19	13	5	41	9	20	4	4	37	209
08:45 AM	4	37	16	3	60	30	27	4	5	66	8	38	20	0	66	12	29	1	6	48	240
Total	17	160	66	9	252	166	100	9	19	294	20	103	62	5	190	37	85	15	19	156	892
Grand Total	42	405	171	25	643	462	271	23	66	822	40	234	125	21	420	82	165	33	60	340	2225
Apprch %	6.5	63	26.6	3.9		56.2	33	2.8	8		9.5	55.7	29.8	5		24.1	48.5	9.7	17.6		
Total %	1.9	18.2	7.7	1.1	28.9	20.8	12.2	1	3	36.9	1.8	10.5	5.6	0.9	18.9	3.7	7.4	1.5	2.7	15.3	

	Kamakee Street Southbound				Queen Street Westbound				Kamakee Street Northbound				Queen 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 07:30 AM																	
07:30 AM	2	36	14	52	55	34	**2**	91	**5**	19	**16**	40	**17**	13	2	32	215
07:45 AM	**5**	**50**	**23**	**78**	**56**	**42**	2	**100**	3	**28**	12	43	8	20	4	32	**253**
08:00 AM	4	50	17	71	51	34	0	85	4	18	15	37	8	**24**	3	**35**	228
08:15 AM	4	45	10	59	46	15	1	62	4	28	14	**46**	8	12	**7**	27	194
Total Volume	15	181	64	260	208	125	5	338	16	93	57	166	41	69	16	126	890
% App. Total	5.8	69.6	24.6		61.5	37	1.5		9.6	56	34.3		32.5	54.8	12.7		
PHF	.750	.905	.696	.833	.929	.744	.625	.845	.800	.830	.891	.902	.603	.719	.571	.900	.879

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5677,5676
Counted By:PA,BO
Weather:Clear

File Name : KamQuePM
Site Code : 00000002
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Kamakee Street Southbound					Queen Street Westbound					Kamakee Street Northbound					Queen 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	7	41	18	1	67	41	28	3	1	73	9	43	29	1	82	10	46	19	6	81	303
03:15 PM	3	32	10	1	46	52	44	5	2	103	8	57	27	4	96	22	49	5	7	83	328
03:30 PM	1	42	10	0	53	57	32	6	3	98	5	47	24	2	78	12	41	6	15	74	303
03:45 PM	3	28	6	0	37	63	46	2	5	116	5	45	30	1	81	18	43	8	5	74	308
Total	14	143	44	2	203	213	150	16	11	390	27	192	110	8	337	62	179	38	33	312	1242
04:00 PM	9	33	4	5	51	68	40	4	6	118	1	53	21	3	78	20	44	10	7	81	328
04:15 PM	4	31	10	1	46	62	33	1	4	100	6	39	29	1	75	36	47	5	9	97	318
04:30 PM	4	21	5	1	31	42	39	3	5	89	10	51	20	2	83	20	62	11	9	102	305
04:45 PM	3	27	9	5	44	52	43	1	9	105	13	56	20	1	90	23	64	22	16	125	364
Total	20	112	28	12	172	224	155	9	24	412	30	199	90	7	326	99	217	48	41	405	1315
05:00 PM	3	31	5	4	43	63	39	1	7	110	5	45	42	4	96	31	68	14	7	120	369
05:15 PM	5	33	9	4	51	71	36	4	3	114	8	51	29	4	92	29	82	11	6	128	385
05:30 PM	4	39	16	4	63	60	42	4	11	117	13	33	22	5	73	33	62	11	13	119	372
05:45 PM	5	55	11	6	77	0	0	0	0	0	0	0	0	0	0	19	61	10	16	106	183
Total	17	158	41	18	234	194	117	9	21	341	26	129	93	13	261	112	273	46	42	473	1309
Grand Total	51	413	113	32	609	631	422	34	56	1143	83	520	293	28	924	273	669	132	116	1190	3866
Apprch %	8.4	67.8	18.6	5.3		55.2	36.9	3	4.9		9	56.3	31.7	3		22.9	56.2	11.1	9.7		
Total %	1.3	10.7	2.9	0.8	15.8	16.3	10.9	0.9	1.4	29.6	2.1	13.5	7.6	0.7	23.9	7.1	17.3	3.4	3	30.8	

	Kamakee Street Southbound				Queen Street Westbound				Kamakee Street Northbound				Queen 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 04:45 PM																	
04:45 PM	3	27	9	39	52	**43**	1	96	**13**	**56**	20	89	23	64	**22**	109	333
05:00 PM	3	31	5	39	63	39	1	103	5	45	**42**	**92**	31	68	14	113	347
05:15 PM	**5**	33	9	47	**71**	36	**4**	**111**	8	51	29	88	29	**82**	11	**122**	**368**
05:30 PM	4	**39**	**16**	**59**	60	42	4	106	13	33	22	68	**33**	62	11	106	339
Total Volume	15	130	39	184	246	160	10	416	39	185	113	337	116	276	58	450	1387
% App. Total	8.2	70.7	21.2		59.1	38.5	2.4		11.6	54.9	33.5		25.8	61.3	12.9		
PHF	.750	.833	.609	.780	.866	.930	.625	.937	.750	.826	.673	.916	.879	.841	.659	.922	.942

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5672,5674
Counted By:RJ,SF
Weather:Clear

File Name : AlaQueAM
Site Code : 00000006
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Queen Street Southbound					Ala Moana Blvd. Westbound					Northbound	Ala Moana Blvd. 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	2	0	2	7	11	0	222	13	0	235	0	0	190	0	3	193	439
06:15 AM	3	0	2	13	18	0	235	8	0	243	0	0	242	0	4	246	507
06:30 AM	4	0	2	7	13	0	311	16	0	327	0	1	307	0	17	325	665
06:45 AM	4	0	3	8	15	0	389	19	0	408	0	0	338	0	12	350	773
Total	13	0	9	35	57	0	1157	56	0	1213	0	1	1077	0	36	1114	2384
07:00 AM	8	0	2	17	27	0	424	19	0	443	0	2	373	0	16	391	861
07:15 AM	6	0	4	17	27	0	493	26	0	519	0	4	435	0	9	448	994
07:30 AM	12	0	5	9	26	0	562	41	0	603	0	1	395	0	9	405	1034
07:45 AM	9	0	4	23	36	0	438	30	0	468	0	2	365	0	21	388	892
Total	35	0	15	66	116	0	1917	116	0	2033	0	9	1568	0	55	1632	3781
08:00 AM	10	0	5	14	29	0	445	40	0	485	0	2	406	0	6	414	928
08:15 AM	11	0	7	18	36	0	401	38	0	439	0	4	351	0	17	372	847
08:30 AM	13	0	6	8	27	0	366	39	0	405	0	0	371	0	7	378	810
08:45 AM	26	0	9	8	43	0	325	33	0	358	0	3	351	0	11	365	766
Total	60	0	27	48	135	0	1537	150	0	1687	0	9	1479	0	41	1529	3351
Grand Total	108	0	51	149	308	0	4611	322	0	4933	0	19	4124	0	132	4275	9516
Apprch %	35.1	0	16.6	48.4		0	93.5	6.5	0			0.4	96.5	0	3.1		
Total %	1.1	0	0.5	1.6	3.2	0	48.5	3.4	0	51.8	0	0.2	43.3	0	1.4	44.9	

	Queen Street Southbound				Ala Moana Blvd. Westbound				Northbound	Ala Moana Blvd. 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 07:15 AM														
07:15 AM	6	0	4	10	0	493	26	519	0	**4**	**435**	0	**439**	968
07:30 AM	**12**	0	**5**	**17**	0	**562**	**41**	**603**	0	1	395	0	396	**1016**
07:45 AM	9	0	4	13	0	438	30	468	0	2	365	0	367	848
08:00 AM	10	0	5	15	0	445	40	485	0	2	406	0	408	908
Total Volume	37	0	18	55	0	1938	137	2075	0	9	1601	0	1610	3740
% App. Total	67.3	0	32.7		0	93.4	6.6			0.6	99.4	0		
PHF	.771	.000	.900	.809	.000	.862	.835	.860	.000	.563	.920	.000	.917	.920

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hawaii

Counter:5672,5674
Counted By:RJ,SF
Weather:Clear

File Name : AlaQuePM
Site Code : 00000006
Start Date : 4/20/2011
Page No : 1

Groups Printed- Unshifted

	Queen Street Southbound					Ala Moana Blvd. Westbound					Northbound	Ala Moana Blvd. 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	37	0	14	16	67	0	413	40	0	453	0	9	460	0	11	480	1000
03:15 PM	37	0	10	33	80	0	391	40	0	431	0	6	515	0	8	529	1040
03:30 PM	48	0	7	8	63	0	373	46	0	419	0	8	523	0	5	536	1018
03:45 PM	49	0	7	10	66	0	348	54	0	402	0	4	525	0	9	538	1006
Total	171	0	38	67	276	0	1525	180	0	1705	0	27	2023	0	33	2083	4064
04:00 PM	42	0	5	32	79	0	400	46	0	446	0	5	514	0	8	527	1052
04:15 PM	51	0	10	11	72	0	444	64	0	508	0	4	561	0	7	572	1152
04:30 PM	45	0	12	17	74	0	368	55	0	423	0	6	540	0	11	557	1054
04:45 PM	52	0	9	20	81	0	418	54	0	472	0	4	544	0	5	553	1106
Total	190	0	36	80	306	0	1630	219	0	1849	0	19	2159	0	31	2209	4364
05:00 PM	57	0	6	20	83	0	361	48	0	409	0	2	525	0	13	540	1032
05:15 PM	44	0	12	14	70	0	394	67	0	461	0	4	579	0	7	590	1121
05:30 PM	61	0	10	22	93	0	319	68	0	387	0	4	533	0	14	551	1031
05:45 PM	45	0	8	33	86	0	326	51	0	377	0	3	593	0	22	618	1081
Total	207	0	36	89	332	0	1400	234	0	1634	0	13	2230	0	56	2299	4265
Grand Total	568	0	110	236	914	0	4555	633	0	5188	0	59	6412	0	120	6591	12693
Apprch %	62.1	0	12	25.8		0	87.8	12.2	0			0.9	97.3	0	1.8		
Total %	4.5	0	0.9	1.9	7.2	0	35.9	5	0	40.9	0	0.5	50.5	0	0.9	51.9	

	Queen Street Southbound				Ala Moana Blvd. Westbound				Northbound	Ala Moana Blvd. 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	42	0	5	47	0	400	46	446	0	5	514	0	519	1012
04:15 PM	51	0	10	**61**	0	**444**	**64**	**508**	0	4	**561**	0	**565**	**1134**
04:30 PM	45	0	**12**	57	0	368	55	423	0	**6**	540	0	546	1026
04:45 PM	**52**	0	9	61	0	418	54	472	0	4	544	0	548	1081
Total Volume	190	0	36	226	0	1630	219	1849	0	19	2159	0	2178	4253
% App. Total	84.1	0	15.9		0	88.2	11.8			0.9	99.1	0		
PHF	.913	.000	.750	.926	.000	.918	.855	.910	.000	.792	.962	.000	.964	.938

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

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

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

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

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

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

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

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

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

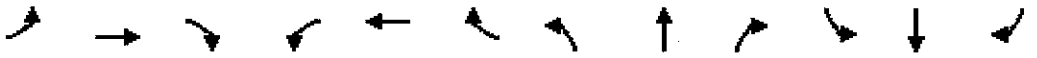
Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

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

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	94	52	47	185	28	64	374	31	30	824	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825	1583		1844	1583	1770	3499		1770	3439	
Flt Permitted		0.63	1.00		0.91	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1166	1583		1687	1583	1770	3499		1770	3439	
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)	73	104	58	52	206	31	71	416	34	33	916	212
RTOR Reduction (vph)	0	0	42	0	0	23	0	5	0	0	18	0
Lane Group Flow (vph)	0	177	16	0	258	8	71	445	0	33	1110	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		21.1	21.1		21.1	21.1	7.3	44.6		7.3	44.6	
Effective Green, g (s)		24.1	24.1		24.1	22.1	10.3	47.6		10.3	47.6	
Actuated g/C Ratio		0.27	0.27		0.27	0.25	0.11	0.53		0.11	0.53	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		312	424		452	389	203	1851		203	1819	
v/s Ratio Prot							c0.04	0.13		0.02	c0.32	
v/s Ratio Perm		0.15	0.01		c0.15	0.00						
v/c Ratio		0.57	0.04		0.57	0.02	0.35	0.24		0.16	0.61	
Uniform Delay, d1		28.4	24.4		28.5	25.7	36.8	11.4		36.0	14.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4	0.0		1.7	0.0	1.0	0.3		0.4	1.5	
Delay (s)		30.8	24.4		30.2	25.8	37.8	11.7		36.3	16.3	
Level of Service		C	C		C	C	D	B		D	B	
Approach Delay (s)		29.2			29.7			15.3			16.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	279	123	43	221	57	67	717	68	70	728	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1834	1583		1848	1583	1770	3493		1770	3481	
Flt Permitted		0.67	1.00		0.75	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1250	1583		1399	1583	1770	3493		1770	3481	
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)	144	310	137	48	246	63	74	797	76	78	809	99
RTOR Reduction (vph)	0	0	82	0	0	39	0	7	0	0	10	0
Lane Group Flow (vph)	0	454	55	0	294	24	74	866	0	78	898	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		33.1	33.1		33.1	33.1	7.4	32.5		7.4	32.5	
Effective Green, g (s)		36.1	36.1		36.1	34.1	10.4	35.5		10.4	35.5	
Actuated g/C Ratio		0.40	0.40		0.40	0.38	0.12	0.39		0.12	0.39	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		501	635		561	600	205	1378		205	1373	
v/s Ratio Prot							0.04	0.25		c0.04	c0.26	
v/s Ratio Perm		c0.36	0.03		0.21	0.02						
v/c Ratio		0.91	0.09		0.52	0.04	0.36	0.63		0.38	0.65	
Uniform Delay, d1		25.4	16.7		20.4	17.6	36.7	21.9		36.8	22.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		19.8	0.1		0.9	0.0	1.1	2.2		1.2	2.4	
Delay (s)		45.2	16.8		21.3	17.7	37.8	24.1		38.0	24.7	
Level of Service		D	B		C	B	D	C		D	C	
Approach Delay (s)		38.6			20.7			25.2			25.7	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM Average Control Delay	27.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	75.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	40	376	0	17	579	275	100	18	38	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	1.00	0.95		1.00	0.95			1.00				
Frt	1.00	1.00		1.00	0.95			0.97				
Flt Protected	0.95	1.00		0.95	1.00			0.97				
Satd. Flow (prot)	1770	3539		1770	3368			1746				
Flt Permitted	0.28	1.00		0.51	1.00			0.97				
Satd. Flow (perm)	525	3539		954	3368			1746				
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)	43	409	0	18	629	299	109	20	41	0	0	0
RTOR Reduction (vph)	0	0	0	0	53	0	0	17	0	0	0	0
Lane Group Flow (vph)	43	409	0	18	875	0	0	153	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	54.2	54.2		54.2	54.2			15.8				
Effective Green, g (s)	54.2	54.2		54.2	54.2			15.8				
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.20				
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)	356	2398		646	2282			345				
v/s Ratio Prot		0.12			c0.26							
v/s Ratio Perm	0.08			0.02				0.09				
v/c Ratio	0.12	0.17		0.03	0.38			0.44				
Uniform Delay, d1	4.5	4.7		4.2	5.6			28.2				
Progression Factor	0.94	0.93		1.00	1.00			1.00				
Incremental Delay, d2	0.7	0.2		0.1	0.5			0.9				
Delay (s)	4.9	4.5		4.3	6.1			29.1				
Level of Service	A	A		A	A			C				
Approach Delay (s)		4.5			6.1			29.1			0.0	
Approach LOS		A			A			C			A	

Intersection Summary				
HCM Average Control Delay	8.1	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	49.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	32	622	10	21	702	119	240	20	67	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	1.00	0.95		1.00	0.95			1.00				
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00				
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00				
Frt	1.00	1.00		1.00	0.98			0.97				
Flt Protected	0.95	1.00		0.95	1.00			0.96				
Satd. Flow (prot)	1770	3531		1770	3430			1747				
Flt Permitted	0.28	1.00		0.37	1.00			0.96				
Satd. Flow (perm)	523	3531		687	3430			1747				
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)	35	676	11	23	763	129	261	22	73	0	0	0
RTOR Reduction (vph)	0	1	0	0	15	0	0	13	0	0	0	0
Lane Group Flow (vph)	35	686	0	23	877	0	0	343	0	0	0	0
Confl. Peds. (#/hr)						21						
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	49.2	49.2		49.2	49.2			20.8				
Effective Green, g (s)	49.2	49.2		49.2	49.2			20.8				
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.26				
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)	322	2172		423	2109			454				
v/s Ratio Prot		0.19			c0.26							
v/s Ratio Perm	0.07			0.03				0.20				
v/c Ratio	0.11	0.32		0.05	0.42			0.76				
Uniform Delay, d1	6.4	7.4		6.1	8.0			27.3				
Progression Factor	0.92	0.93		1.00	1.00			1.00				
Incremental Delay, d2	0.7	0.4		0.2	0.6			7.1				
Delay (s)	6.5	7.2		6.4	8.6			34.3				
Level of Service	A	A		A	A			C				
Approach Delay (s)		7.2			8.5			34.3			0.0	
Approach LOS		A			A			C			A	

Intersection Summary				
HCM Average Control Delay	12.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	44	28	78	79	67	49	234	57	95	376	53
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		1.00	1.00		1.00	0.95		1.00	0.95	
Frt		0.96		1.00	0.93		1.00	0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1768		1770	1734		1770	3435		1770	3473	
Flt Permitted		0.89		0.71	1.00		0.48	1.00		0.56	1.00	
Satd. Flow (perm)		1596		1326	1734		901	3435		1043	3473	
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)	27	48	30	85	86	73	53	254	62	103	409	58
RTOR Reduction (vph)	0	23	0	0	50	0	0	17	0	0	9	0
Lane Group Flow (vph)	0	82	0	85	109	0	53	299	0	103	458	0
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)		15.6		15.6	15.6		54.4	54.4		54.4	54.4	
Effective Green, g (s)		15.6		15.6	15.6		54.4	54.4		54.4	54.4	
Actuated g/C Ratio		0.19		0.19	0.19		0.68	0.68		0.68	0.68	
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)		311		259	338		613	2336		709	2362	
v/s Ratio Prot					0.06			0.09			c0.13	
v/s Ratio Perm		0.05		c0.06			0.06			0.10		
v/c Ratio		0.26		0.33	0.32		0.09	0.13		0.15	0.19	
Uniform Delay, d1		27.3		27.7	27.7		4.4	4.5		4.5	4.7	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.83	0.82	
Incremental Delay, d2		0.5		0.7	0.6		0.3	0.1		0.4	0.2	
Delay (s)		27.8		28.4	28.2		4.6	4.6		4.2	4.0	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		27.8			28.3			4.6			4.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	85	9	96	73	241	28	329	128	211	323	211
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	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.88		1.00	0.96		1.00	0.94	
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3480	1583	1770	1648		1770	3391		1770	3330	
Flt Permitted		0.60	1.00	0.66	1.00		0.43	1.00		0.47	1.00	
Satd. Flow (perm)		2140	1583	1235	1648		802	3391		876	3330	
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)	48	92	10	104	79	262	30	358	139	229	351	229
RTOR Reduction (vph)	0	0	8	0	194	0	0	33	0	0	76	0
Lane Group Flow (vph)	0	140	2	104	147	0	30	464	0	229	504	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		16.4	16.4	16.4	16.4		53.6	53.6		53.6	53.6	
Effective Green, g (s)		16.4	16.4	16.4	16.4		53.6	53.6		53.6	53.6	
Actuated g/C Ratio		0.20	0.20	0.20	0.20		0.67	0.67		0.67	0.67	
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)		439	325	253	338		537	2272		587	2231	
v/s Ratio Prot					c0.09			0.14			0.15	
v/s Ratio Perm		0.07	0.00	0.08			0.04			c0.26		
v/c Ratio		0.32	0.01	0.41	0.43		0.06	0.20		0.39	0.23	
Uniform Delay, d1		27.0	25.3	27.6	27.8		4.5	5.0		5.9	5.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		0.56	0.45	
Incremental Delay, d2		0.4	0.0	1.1	0.9		0.2	0.2		1.8	0.2	
Delay (s)		27.5	25.3	28.7	28.7		4.7	5.3		5.1	2.5	
Level of Service		C	C	C	C		A	A		A	A	
Approach Delay (s)		27.3			28.7			5.2			3.2	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM Average Control Delay	11.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	1566	2	47	1687	123	1	143	3	106	91	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5084		1770	5085	1583		3538	1583	1770	3174	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5084		1770	5085	1583		3538	1583	1770	3174	
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)	272	1740	2	52	1874	137	1	159	3	118	101	222
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	3	0	189	0
Lane Group Flow (vph)	272	1742	0	52	1874	103	0	160	0	118	134	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			
Actuated Green, G (s)	30.1	80.4		8.3	58.6	58.6		11.7	11.7	18.6	18.6	
Effective Green, g (s)	32.1	83.4		10.3	61.6	61.6		13.7	12.7	20.6	20.6	
Actuated g/C Ratio	0.23	0.60		0.07	0.44	0.44		0.10	0.09	0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		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)	406	3029		130	2237	697		346	144	260	467	
v/s Ratio Prot	c0.15	0.34		0.03	c0.37			c0.05		c0.07	0.04	
v/s Ratio Perm						0.07			0.00			
v/c Ratio	0.67	0.58		0.40	0.84	0.15		0.46	0.00	0.45	0.29	
Uniform Delay, d1	49.1	17.4		61.9	34.8	23.5		59.7	57.9	54.6	53.2	
Progression Factor	1.00	1.00		0.84	0.78	0.87		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	0.8		1.8	3.5	0.4		1.0	0.0	1.3	0.3	
Delay (s)	53.3	18.2		54.0	30.7	20.8		60.7	57.9	55.8	53.5	
Level of Service	D	B		D	C	C		E	E	E	D	
Approach Delay (s)		22.9			30.7			60.6			54.1	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	296	2146	5	25	1787	132	9	106	48	232	43	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5083		1770	5085	1583		3525	1583	1770	3094	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5083		1770	5085	1583		3525	1583	1770	3094	
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)	329	2384	6	28	1986	147	10	118	53	258	48	248
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	49	0	196	0
Lane Group Flow (vph)	329	2390	0	28	1986	113	0	128	4	258	100	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			
Actuated Green, G (s)	29.3	76.3		5.1	52.1	52.1		10.5	10.5	27.1	27.1	
Effective Green, g (s)	31.3	79.3		7.1	55.1	55.1		12.5	11.5	29.1	29.1	
Actuated g/C Ratio	0.22	0.57		0.05	0.39	0.39		0.09	0.08	0.21	0.21	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		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)	396	2879		90	2001	623		315	130	368	643	
v/s Ratio Prot	c0.19	0.47		0.02	c0.39			c0.04		c0.15	0.03	
v/s Ratio Perm						0.07			0.00			
v/c Ratio	0.83	0.83		0.31	0.99	0.18		0.41	0.03	0.70	0.15	
Uniform Delay, d1	51.8	24.8		64.1	42.2	27.7		60.2	59.1	51.4	45.4	
Progression Factor	1.00	1.00		0.78	0.83	0.93		1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.8	2.9		1.7	17.1	0.6		0.9	0.1	5.9	0.1	
Delay (s)	65.6	27.8		51.8	52.2	26.3		61.1	59.2	57.4	45.5	
Level of Service	E	C		D	D	C		E	E	E	D	
Approach Delay (s)		32.4			50.4			60.6			51.0	
Approach LOS		C			D			E			D	

Intersection Summary				
HCM Average Control Delay	42.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	80.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	41	69	16	208	125	5	16	93	57	15	181	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	75	17	226	136	5	17	101	62	16	197	70

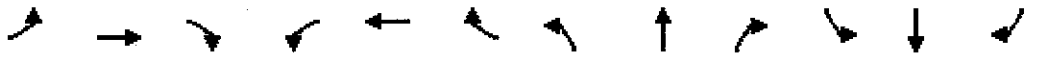
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	45	75	17	226	141	68	113	115	168
Volume Left (vph)	45	0	0	226	0	17	0	16	0
Volume Right (vph)	0	0	17	0	5	0	62	0	70
Hadj (s)	0.53	0.03	-0.67	0.53	0.01	0.16	-0.35	0.11	-0.26
Departure Headway (s)	6.8	6.3	3.2	6.5	5.9	6.4	5.9	6.2	5.9
Degree Utilization, x	0.08	0.13	0.02	0.41	0.23	0.12	0.19	0.20	0.27
Capacity (veh/h)	492	531	1121	537	579	526	570	547	581
Control Delay (s)	9.3	9.1	5.1	12.6	9.5	9.1	9.1	9.6	9.9
Approach Delay (s)	8.6			11.4		9.1		9.8	
Approach LOS	A			B		A		A	

Intersection Summary				
Delay	10.1			
HCM Level of Service	B			
Intersection Capacity Utilization	40.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	116	276	58	246	160	10	39	185	113	15	130	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	300	63	267	174	11	42	201	123	16	141	42

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	126	300	63	267	185	143	223	87	113
Volume Left (vph)	126	0	0	267	0	42	0	16	0
Volume Right (vph)	0	0	63	0	11	0	123	0	42
Hadj (s)	0.53	0.03	-0.67	0.53	-0.01	0.18	-0.35	0.13	-0.23
Departure Headway (s)	7.6	7.1	3.2	7.6	7.0	7.6	7.1	7.9	7.5
Degree Utilization, x	0.27	0.59	0.06	0.56	0.36	0.30	0.44	0.19	0.24
Capacity (veh/h)	452	483	1121	455	493	453	488	429	449
Control Delay (s)	12.2	18.8	5.2	18.7	12.8	12.6	14.2	11.5	11.6
Approach Delay (s)	15.4			16.3		13.6		11.5	
Approach LOS	C			C		B		B	

Intersection Summary				
Delay	14.7			
HCM Level of Service	B			
Intersection Capacity Utilization	56.6%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	61	32	12	73	55	36	93	22	56	178	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	1.00
Frt	1.00	0.95		1.00	0.94		1.00	0.97		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	3355		1770	3310		1770	3437		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.64	1.00		0.67	1.00	1.00
Satd. Flow (perm)	1770	3355		1770	3310		1185	3437		1253	1863	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)	29	66	35	13	79	60	39	101	24	61	193	151
RTOR Reduction (vph)	0	27	0	0	46	0	0	14	0	0	0	89
Lane Group Flow (vph)	29	74	0	13	93	0	39	111	0	61	193	62
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	1.1	10.8		0.9	10.6		18.8	18.8		18.8	18.8	18.8
Effective Green, g (s)	1.1	10.8		0.9	10.6		18.8	18.8		18.8	18.8	18.8
Actuated g/C Ratio	0.02	0.24		0.02	0.23		0.41	0.41		0.41	0.41	0.41
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)	43	796		35	771		490	1420		518	770	654
v/s Ratio Prot	c0.02	0.02		0.01	c0.03			0.03			c0.10	
v/s Ratio Perm							0.03			0.05		0.04
v/c Ratio	0.67	0.09		0.37	0.12		0.08	0.08		0.12	0.25	0.10
Uniform Delay, d1	22.0	13.5		22.0	13.8		8.1	8.1		8.2	8.7	8.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1		6.5	0.1		0.1	0.0		0.1	0.2	0.1
Delay (s)	22.5	13.6		28.6	13.8		8.2	8.1		8.3	8.9	8.2
Level of Service	C	B		C	B		A	A		A	A	A
Approach Delay (s)		23.2			15.1			8.1			8.6	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	203	59	15	161	136	92	132	44	95	188	150
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	1.00
Frt	1.00	0.97		1.00	0.93		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	3420		1770	3296		1770	3406		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1770	3420		1770	3296		1155	3406		1176	1863	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)	148	221	64	16	175	148	100	143	48	103	204	163
RTOR Reduction (vph)	0	29	0	0	101	0	0	34	0	0	0	117
Lane Group Flow (vph)	148	256	0	16	222	0	100	157	0	103	204	46
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	7.9	24.9		1.2	18.2		16.1	16.1		16.1	16.1	16.1
Effective Green, g (s)	7.9	24.9		1.2	18.2		16.1	16.1		16.1	16.1	16.1
Actuated g/C Ratio	0.14	0.44		0.02	0.32		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	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)	244	1489		37	1049		325	959		331	524	446
v/s Ratio Prot	c0.08	0.07		0.01	c0.07			0.05			c0.11	
v/s Ratio Perm							0.09			0.09		0.03
v/c Ratio	0.61	0.17		0.43	0.21		0.31	0.16		0.31	0.39	0.10
Uniform Delay, d1	23.2	9.9		27.7	14.3		16.2	15.5		16.2	16.6	15.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.2	0.1		7.9	0.1		0.5	0.1		0.5	0.5	0.1
Delay (s)	27.4	9.9		35.6	14.4		16.7	15.6		16.7	17.1	15.3
Level of Service	C	A		D	B		B	B		B	B	B
Approach Delay (s)		15.9			15.4			16.0			16.4	
Approach LOS		B			B			B			B	

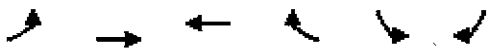
Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	1555	137	6	1800	22	89	36	14	25	50	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	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)	1770	5024		1770	5076			1799	1583		1832	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.67	1.00		0.87	1.00
Satd. Flow (perm)	1770	5024		1770	5076			1240	1583		1624	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)	68	1728	152	7	2000	24	99	40	16	28	56	151
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	13	0	0	124
Lane Group Flow (vph)	68	1875	0	7	2023	0	0	139	3	0	84	27
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4		4	4		4
Actuated Green, G (s)	9.2	99.1		1.5	91.4			23.4	23.4		23.4	23.4
Effective Green, g (s)	11.2	102.1		3.5	94.4			25.4	25.4		25.4	25.4
Actuated g/C Ratio	0.08	0.73		0.02	0.67			0.18	0.18		0.18	0.18
Clearance Time (s)	5.0	6.0		5.0	6.0			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)	142	3664		44	3423			225	287		295	287
v/s Ratio Prot	c0.04	0.37		0.00	c0.40							
v/s Ratio Perm								c0.11	0.00		0.05	0.02
v/c Ratio	0.48	0.51		0.16	0.59			0.62	0.01		0.28	0.10
Uniform Delay, d1	61.6	8.2		66.8	12.3			52.8	47.0		49.5	47.7
Progression Factor	1.13	0.98		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.5		1.7	0.8			5.0	0.0		0.5	0.1
Delay (s)	71.9	8.5		68.5	13.1			57.8	47.0		50.0	47.9
Level of Service	E	A		E	B			E	D		D	D
Approach Delay (s)		10.7			13.3			56.7			48.6	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

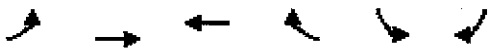
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	2168	274	32	1388	72	107	49	48	43	91	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99			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)	1770	5000		1770	5048			1801	1583		1833	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.54	1.00		0.74	1.00
Satd. Flow (perm)	1770	5000		1770	5048			997	1583		1371	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)	133	2409	304	36	1542	80	119	54	53	48	101	134
RTOR Reduction (vph)	0	9	0	0	3	0	0	0	42	0	0	106
Lane Group Flow (vph)	133	2704	0	36	1619	0	0	173	11	0	149	28
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4		4	4		4
Actuated Green, G (s)	15.0	90.1		6.7	81.8			27.2	27.2		27.2	27.2
Effective Green, g (s)	17.0	93.1		8.7	84.8			29.2	29.2		29.2	29.2
Actuated g/C Ratio	0.12	0.66		0.06	0.61			0.21	0.21		0.21	0.21
Clearance Time (s)	5.0	6.0		5.0	6.0			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	3325		110	3058			208	330		286	330
v/s Ratio Prot	c0.08	c0.54		0.02	0.32							
v/s Ratio Perm								c0.17	0.01		0.11	0.02
v/c Ratio	0.62	0.81		0.33	0.53			0.83	0.03		0.52	0.08
Uniform Delay, d1	58.4	17.1		62.8	16.0			53.0	44.2		49.2	44.6
Progression Factor	1.04	1.24		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	5.0	2.2		1.7	0.7			23.7	0.0		1.7	0.1
Delay (s)	65.8	23.4		64.6	16.7			76.8	44.2		50.9	44.7
Level of Service	E	C		E	B			E	D		D	D
Approach Delay (s)		25.4			17.7			69.1			48.0	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	9	1601	1938	137	37	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	5035		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	5035		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	1779	2153	152	41	20
RTOR Reduction (vph)	0	0	3	0	0	17
Lane Group Flow (vph)	10	1779	2302	0	41	3
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	1.6	110.3	103.7		18.7	18.7
Effective Green, g (s)	3.6	113.3	106.7		20.7	20.7
Actuated g/C Ratio	0.03	0.81	0.76		0.15	0.15
Clearance Time (s)	5.0	6.0	6.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	46	4115	3837		508	234
v/s Ratio Prot	0.01	c0.35	c0.46		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.22	0.43	0.60		0.08	0.01
Uniform Delay, d1	66.8	3.9	7.3		51.4	50.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.4	0.3	0.7		0.1	0.0
Delay (s)	69.2	4.2	8.0		51.5	50.9
Level of Service	E	A	A		D	D
Approach Delay (s)		4.6	8.0		51.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	19	2159	1630	219	190	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	4995		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	4995		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	2399	1811	243	211	40
RTOR Reduction (vph)	0	0	9	0	0	34
Lane Group Flow (vph)	21	2399	2045	0	211	6
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	4.9	110.2	100.3		18.8	18.8
Effective Green, g (s)	6.9	113.2	103.3		20.8	20.8
Actuated g/C Ratio	0.05	0.81	0.74		0.15	0.15
Clearance Time (s)	5.0	6.0	6.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	87	4112	3686		510	235
v/s Ratio Prot	0.01	c0.47	0.41		c0.06	
v/s Ratio Perm						0.00
v/c Ratio	0.24	0.58	0.55		0.41	0.03
Uniform Delay, d1	64.0	4.9	8.1		54.1	50.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.6	0.6		0.5	0.0
Delay (s)	65.5	5.5	8.8		54.6	51.0
Level of Service	E	A	A		D	D
Approach Delay (s)		6.0	8.8		54.0	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2016 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	95	60	50	190	30	70	400	35	30	870	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1583		1843	1583	1770	3496		1770	3440	
Flt Permitted		0.60	1.00		0.90	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1117	1583		1669	1583	1770	3496		1770	3440	
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)	78	106	67	56	211	33	78	444	39	33	967	222
RTOR Reduction (vph)	0	0	49	0	0	25	0	6	0	0	18	0
Lane Group Flow (vph)	0	184	18	0	267	8	78	477	0	33	1171	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		21.4	21.4		21.4	21.4	7.4	44.2		7.4	44.2	
Effective Green, g (s)		24.4	24.4		24.4	22.4	10.4	47.2		10.4	47.2	
Actuated g/C Ratio		0.27	0.27		0.27	0.25	0.12	0.52		0.12	0.52	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		303	429		452	394	205	1833		205	1804	
v/s Ratio Prot							c0.04	0.14		0.02	c0.34	
v/s Ratio Perm		c0.16	0.01		0.16	0.01						
v/c Ratio		0.61	0.04		0.59	0.02	0.38	0.26		0.16	0.65	
Uniform Delay, d1		28.6	24.2		28.5	25.5	36.8	11.8		35.9	15.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.4	0.0		2.1	0.0	1.2	0.3		0.4	1.8	
Delay (s)		32.0	24.2		30.5	25.5	38.0	12.1		36.2	17.3	
Level of Service		C	C		C	C	D	B		D	B	
Approach Delay (s)		30.0			30.0			15.7			17.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	280	130	45	220	60	70	760	70	70	770	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1834	1583		1847	1583	1770	3494		1770	3484	
Flt Permitted		0.67	1.00		0.74	1.00	0.16	1.00		0.17	1.00	
Satd. Flow (perm)		1248	1583		1371	1583	289	3494		315	3484	
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)	144	311	144	50	244	67	78	844	78	78	856	100
RTOR Reduction (vph)	0	0	86	0	0	42	0	7	0	0	9	0
Lane Group Flow (vph)	0	455	58	0	294	25	78	915	0	78	947	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4	2			2		
Actuated Green, G (s)		33.0	33.0		33.0	33.0	40.0	33.7		40.0	33.7	
Effective Green, g (s)		36.0	36.0		36.0	34.0	46.0	36.7		46.0	36.7	
Actuated g/C Ratio		0.40	0.40		0.40	0.38	0.51	0.41		0.51	0.41	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		499	633		548	598	301	1425		311	1421	
v/s Ratio Prot							c0.03	0.26		0.03	c0.27	
v/s Ratio Perm		c0.36	0.04		0.21	0.02	0.11			0.10		
v/c Ratio		0.91	0.09		0.54	0.04	0.26	0.64		0.25	0.67	
Uniform Delay, d1		25.5	16.8		20.6	17.7	13.3	21.4		13.0	21.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		20.9	0.1		1.0	0.0	0.5	2.2		0.4	2.5	
Delay (s)		46.4	16.9		21.6	17.7	13.7	23.6		13.5	24.2	
Level of Service		D	B		C	B	B	C		B	C	
Approach Delay (s)		39.3			20.9			22.8			23.4	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM Average Control Delay	26.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	77.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	40	410	0	20	640	275	100	20	40	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	1.00	0.95		1.00	0.95			1.00				
Frt	1.00	1.00		1.00	0.95			0.97				
Flt Protected	0.95	1.00		0.95	1.00			0.97				
Satd. Flow (prot)	1770	3539		1770	3380			1746				
Flt Permitted	0.26	1.00		0.49	1.00			0.97				
Satd. Flow (perm)	481	3539		920	3380			1746				
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)	43	446	0	22	696	299	109	22	43	0	0	0
RTOR Reduction (vph)	0	0	0	0	44	0	0	17	0	0	0	0
Lane Group Flow (vph)	43	446	0	22	951	0	0	157	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	54.2	54.2		54.2	54.2			15.8				
Effective Green, g (s)	54.2	54.2		54.2	54.2			15.8				
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.20				
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)	326	2398		623	2290			345				
v/s Ratio Prot		0.13			c0.28							
v/s Ratio Perm	0.09			0.02				0.09				
v/c Ratio	0.13	0.19		0.04	0.42			0.46				
Uniform Delay, d1	4.6	4.8		4.3	5.8			28.3				
Progression Factor	0.79	0.79		1.00	1.00			1.00				
Incremental Delay, d2	0.8	0.2		0.1	0.6			1.0				
Delay (s)	4.4	3.9		4.4	6.3			29.3				
Level of Service	A	A		A	A			C				
Approach Delay (s)		4.0			6.3			29.3			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	40	680	10	25	760	120	240	20	70	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	1.00	0.95		1.00	0.95			1.00				
Frt	1.00	1.00		1.00	0.98			0.97				
Flt Protected	0.95	1.00		0.95	1.00			0.96				
Satd. Flow (prot)	1770	3531		1770	3467			1746				
Flt Permitted	0.26	1.00		0.34	1.00			0.96				
Satd. Flow (perm)	479	3531		633	3467			1746				
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)	43	739	11	27	826	130	261	22	76	0	0	0
RTOR Reduction (vph)	0	1	0	0	14	0	0	13	0	0	0	0
Lane Group Flow (vph)	43	749	0	27	942	0	0	346	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	49.2	49.2		49.2	49.2			20.8				
Effective Green, g (s)	49.2	49.2		49.2	49.2			20.8				
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.26				
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)	295	2172		389	2132			454				
v/s Ratio Prot		0.21			c0.27							
v/s Ratio Perm	0.09			0.04				0.20				
v/c Ratio	0.15	0.34		0.07	0.44			0.76				
Uniform Delay, d1	6.5	7.5		6.2	8.1			27.3				
Progression Factor	0.89	0.92		1.00	1.00			1.00				
Incremental Delay, d2	1.0	0.4		0.3	0.7			7.4				
Delay (s)	6.8	7.4		6.5	8.8			34.7				
Level of Service	A	A		A	A			C				
Approach Delay (s)		7.3			8.7			34.7			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	60	30	80	100	80	50	240	60	110	380	80
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	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.93		1.00	0.97		1.00	0.97	
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3470	1583	1770	1739		1770	3433		1770	3447	
Flt Permitted		0.76	1.00	0.68	1.00		0.47	1.00		0.55	1.00	
Satd. Flow (perm)		2702	1583	1274	1739		873	3433		1033	3447	
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)	43	65	33	87	109	87	54	261	65	120	413	87
RTOR Reduction (vph)	0	0	27	0	70	0	0	11	0	0	9	0
Lane Group Flow (vph)	0	108	6	87	126	0	54	315	0	120	491	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		15.6	15.6	15.6	15.6		54.4	54.4		54.4	54.4	
Effective Green, g (s)		15.6	15.6	15.6	15.6		54.4	54.4		54.4	54.4	
Actuated g/C Ratio		0.19	0.19	0.19	0.19		0.68	0.68		0.68	0.68	
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)		527	309	248	339		594	2334		702	2344	
v/s Ratio Prot					c0.07			0.09			c0.14	
v/s Ratio Perm		0.04	0.00	0.07			0.06			0.12		
v/c Ratio		0.20	0.02	0.35	0.37		0.09	0.13		0.17	0.21	
Uniform Delay, d1		27.0	26.0	27.8	27.9		4.4	4.5		4.6	4.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		0.41	0.39	
Incremental Delay, d2		0.2	0.0	0.9	0.7		0.3	0.1		0.5	0.2	
Delay (s)		27.2	26.1	28.7	28.6		4.7	4.6		2.4	2.1	
Level of Service		C	C	C	C		A	A		A	A	
Approach Delay (s)		26.9			28.7			4.6			2.1	
Approach LOS		C			C			A			A	

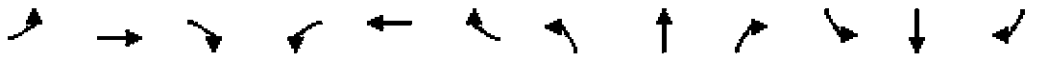
Intersection Summary				
HCM Average Control Delay	10.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.25			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	46.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	110	10	100	90	280	30	340	130	250	330	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		5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.89		1.00	0.96		1.00	0.98	
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3478	1583	1770	1651		1770	3393		1770	3458	
Flt Permitted		0.58	1.00	0.64	1.00		0.50	1.00		0.46	1.00	
Satd. Flow (perm)		2047	1583	1183	1651		940	3393		864	3458	
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)	65	120	11	109	98	304	33	370	141	272	359	65
RTOR Reduction (vph)	0	0	9	0	177	0	0	34	0	0	13	0
Lane Group Flow (vph)	0	185	2	109	225	0	33	477	0	272	411	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		17.9	17.9	17.9	17.9		52.1	52.1		52.1	52.1	
Effective Green, g (s)		17.9	17.9	17.9	17.9		52.1	52.1		52.1	52.1	
Actuated g/C Ratio		0.22	0.22	0.22	0.22		0.65	0.65		0.65	0.65	
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)		458	354	265	369		612	2210		563	2252	
v/s Ratio Prot					c0.14			0.14			0.12	
v/s Ratio Perm		0.09	0.00	0.09			0.04			c0.31		
v/c Ratio		0.40	0.01	0.41	0.61		0.05	0.22		0.48	0.18	
Uniform Delay, d1		26.5	24.1	26.5	27.9		5.0	5.7		7.1	5.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		0.50	0.53	
Incremental Delay, d2		0.6	0.0	1.0	2.9		0.2	0.2		2.7	0.2	
Delay (s)		27.1	24.1	27.6	30.8		5.2	5.9		6.3	3.1	
Level of Service		C	C	C	C		A	A		A	A	
Approach Delay (s)		26.9			30.1			5.8			4.3	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM Average Control Delay	13.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	80.0	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				

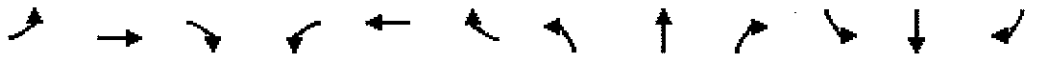
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	1670	10	50	1800	130	10	150	10	110	100	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5081		1770	5085	1583		3528	1583	1770	3185	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5081		1770	5085	1583		3528	1583	1770	3185	
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)	272	1856	11	56	2000	144	11	167	11	122	111	222
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	10	0	189	0
Lane Group Flow (vph)	272	1867	0	56	2000	111	0	178	1	122	144	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			
Actuated Green, G (s)	29.7	79.3		8.6	58.2	58.2		12.4	12.4	18.7	18.7	
Effective Green, g (s)	31.7	82.3		10.6	61.2	61.2		14.4	13.4	20.7	20.7	
Actuated g/C Ratio	0.23	0.59		0.08	0.44	0.44		0.10	0.10	0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0		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)	401	2987		134	2223	692		363	152	262	471	
v/s Ratio Prot	c0.15	0.37		0.03	c0.39			c0.05		c0.07	0.05	
v/s Ratio Perm						0.07			0.00			
v/c Ratio	0.68	0.62		0.42	0.90	0.16		0.49	0.01	0.47	0.31	
Uniform Delay, d1	49.5	18.8		61.8	36.6	23.8		59.3	57.3	54.6	53.2	
Progression Factor	1.00	1.00		0.91	0.79	0.83		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	1.0		1.7	5.4	0.4		1.0	0.0	1.3	0.4	
Delay (s)	54.0	19.8		57.9	34.2	20.2		60.4	57.3	55.9	53.6	
Level of Service	D	B		E	C	C		E	E	E	D	
Approach Delay (s)		24.1			33.9			60.2			54.2	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	2280	5	30	1900	140	10	110	50	235	45	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	3.0		3.0	3.0	3.0		3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5083		1770	5085	1583		3525	1583	1770	3095	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5083		1770	5085	1583		3525	1583	1770	3095	
Peak-hour factor, PHF	0.96	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)	312	2533	6	33	2111	156	11	122	56	261	50	256
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	51	0	202	0
Lane Group Flow (vph)	312	2539	0	33	2111	120	0	133	5	261	104	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			
Actuated Green, G (s)	25.5	75.9		5.2	56.1	56.1		10.6	10.6	27.3	27.3	
Effective Green, g (s)	27.5	78.9		7.2	59.1	59.1		12.6	11.6	29.3	29.3	
Actuated g/C Ratio	0.20	0.56		0.05	0.42	0.42		0.09	0.08	0.21	0.21	
Clearance Time (s)	4.5	6.0		5.0	6.0	6.0		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)	348	2865		91	2147	668		317	131	370	648	
v/s Ratio Prot	c0.18	0.50		0.02	c0.42			c0.04		c0.15	0.03	
v/s Ratio Perm						0.08			0.00			
v/c Ratio	0.90	0.89		0.36	0.98	0.18		0.42	0.04	0.71	0.16	
Uniform Delay, d1	54.9	26.6		64.2	40.0	25.3		60.2	59.1	51.3	45.3	
Progression Factor	1.00	1.00		0.69	0.85	0.99		1.00	1.00	1.00	1.00	
Incremental Delay, d2	24.3	4.5		2.2	14.8	0.5		0.9	0.1	6.0	0.1	
Delay (s)	79.1	31.1		46.2	48.8	25.5		61.1	59.2	57.4	45.4	
Level of Service	E	C		D	D	C		E	E	E	D	
Approach Delay (s)		36.4			47.2			60.6			50.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	70	20	280	130	10	20	100	80	30	185	65
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	1.00	1.00	1.00	0.95			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.99			0.94			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	3501			3311			3397	
Flt Permitted	0.66	1.00	1.00	0.95	1.00			0.91			0.91	
Satd. Flow (perm)	1221	1863	1583	1770	3501			3019			3091	
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)	49	76	22	304	141	11	22	109	87	33	201	71
RTOR Reduction (vph)	0	0	18	0	6	0	0	53	0	0	29	0
Lane Group Flow (vph)	49	76	4	304	146	0	0	165	0	0	276	0
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)	14.4	14.4	14.4	18.9	38.3			31.7			31.7	
Effective Green, g (s)	14.4	14.4	14.4	18.9	38.3			31.7			31.7	
Actuated g/C Ratio	0.18	0.18	0.18	0.24	0.48			0.40			0.40	
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)	220	335	285	418	1676			1196			1225	
v/s Ratio Prot		c0.04		c0.17	0.04							
v/s Ratio Perm	0.04		0.00					0.05			c0.09	
v/c Ratio	0.22	0.23	0.01	0.73	0.09			0.14			0.23	
Uniform Delay, d1	28.0	28.0	27.0	28.2	11.3			15.4			16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.3	0.0	6.2	0.0			0.2			0.4	
Delay (s)	28.5	28.4	27.0	34.4	11.4			15.7			16.4	
Level of Service	C	C	C	C	B			B			B	
Approach Delay (s)		28.2			26.7			15.7			16.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	290	60	330	170	30	40	180	180	30	130	40
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	1.00	1.00	1.00	0.95			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.98			0.93			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	3459			3284			3408	
Flt Permitted	0.62	1.00	1.00	0.95	1.00			0.90			0.85	
Satd. Flow (perm)	1146	1863	1583	1770	3459			2974			2926	
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)	120	315	65	359	185	33	43	196	196	33	141	43
RTOR Reduction (vph)	0	0	48	0	15	0	0	133	0	0	24	0
Lane Group Flow (vph)	120	315	17	359	203	0	0	302	0	0	193	0
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)	18.5	18.5	18.5	20.6	44.1			25.9			25.9	
Effective Green, g (s)	18.5	18.5	18.5	20.6	44.1			25.9			25.9	
Actuated g/C Ratio	0.23	0.23	0.23	0.26	0.55			0.32			0.32	
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)	265	431	366	456	1907			963			947	
v/s Ratio Prot		c0.17		c0.20	0.06							
v/s Ratio Perm	0.10		0.01					c0.10			0.07	
v/c Ratio	0.45	0.73	0.05	0.79	0.11			0.31			0.20	
Uniform Delay, d1	26.4	28.4	23.9	27.7	8.6			20.4			19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.2	6.3	0.1	8.7	0.0			0.9			0.5	
Delay (s)	27.6	34.7	23.9	36.4	8.6			21.2			20.1	
Level of Service	C	C	C	D	A			C			C	
Approach Delay (s)		31.6			25.9			21.2			20.1	
Approach LOS		C			C			C			C	

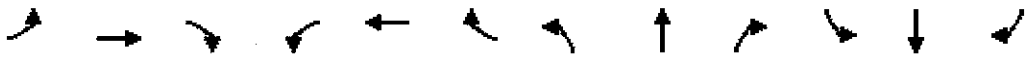
Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	65	35	15	75	70	40	100	25	70	190	160
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	1.00
Frt	1.00	0.95		1.00	0.93		1.00	0.97		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	3354		1770	3284		1770	3434		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.63	1.00		0.67	1.00	1.00
Satd. Flow (perm)	1770	3354		1770	3284		1170	3434		1240	1863	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)	33	71	38	16	82	76	43	109	27	76	207	174
RTOR Reduction (vph)	0	28	0	0	58	0	0	16	0	0	0	105
Lane Group Flow (vph)	33	81	0	16	100	0	43	120	0	76	207	69
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	2.2	12.6		1.0	11.4		18.6	18.6		18.6	18.6	18.6
Effective Green, g (s)	2.2	12.6		1.0	11.4		18.6	18.6		18.6	18.6	18.6
Actuated g/C Ratio	0.05	0.27		0.02	0.24		0.39	0.39		0.39	0.39	0.39
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)	83	895		38	793		461	1353		489	734	624
v/s Ratio Prot	c0.02	0.02		0.01	c0.03			0.03			c0.11	
v/s Ratio Perm							0.04			0.06		0.04
v/c Ratio	0.40	0.09		0.42	0.13		0.09	0.09		0.16	0.28	0.11
Uniform Delay, d1	21.9	13.0		22.8	14.0		9.0	9.0		9.2	9.7	9.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	0.0		7.4	0.1		0.1	0.0		0.1	0.2	0.1
Delay (s)	25.0	13.0		30.2	14.1		9.1	9.0		9.4	10.0	9.1
Level of Service	C	B		C	B		A	A		A	A	A
Approach Delay (s)		15.8			15.6			9.0			9.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	205	60	15	165	160	95	140	45	120	200	170
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	1.00
Frt	1.00	0.97		1.00	0.93		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	3419		1770	3278		1770	3410		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.59	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1770	3419		1770	3278		1107	3410		1165	1863	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)	174	223	65	16	179	174	103	152	49	130	217	185
RTOR Reduction (vph)	0	30	0	0	120	0	0	35	0	0	0	133
Lane Group Flow (vph)	174	258	0	16	233	0	103	166	0	130	217	52
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	8.7	25.8		1.2	18.3		16.6	16.6		16.6	16.6	16.6
Effective Green, g (s)	8.7	25.8		1.2	18.3		16.6	16.6		16.6	16.6	16.6
Actuated g/C Ratio	0.15	0.44		0.02	0.31		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	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)	263	1505		36	1024		314	966		330	528	448
v/s Ratio Prot	c0.10	0.08		0.01	c0.07			0.05			c0.12	
v/s Ratio Perm							0.09			0.11		0.03
v/c Ratio	0.66	0.17		0.44	0.23		0.33	0.17		0.39	0.41	0.12
Uniform Delay, d1	23.6	9.9		28.4	14.9		16.6	15.8		16.9	17.0	15.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.1	0.1		8.5	0.1		0.6	0.1		0.8	0.5	0.1
Delay (s)	29.7	10.0		36.9	15.0		17.2	15.9		17.7	17.6	15.7
Level of Service	C	A		D	B		B	B		B	B	B
Approach Delay (s)		17.4			16.0			16.3			16.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1720	140	10	1950	25	90	40	15	25	50	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	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)	1770	5028		1770	5076			1800	1583		1832	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.67	1.00		0.86	1.00
Satd. Flow (perm)	1770	5028		1770	5076			1247	1583		1602	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)	72	1911	156	11	2167	28	100	44	17	28	56	156
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	14	0	0	128
Lane Group Flow (vph)	72	2062	0	11	2194	0	0	144	3	0	84	28
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4		4	4		4
Actuated Green, G (s)	9.4	97.5		3.0	91.1			23.5	23.5		23.5	23.5
Effective Green, g (s)	11.4	100.5		5.0	94.1			25.5	25.5		25.5	25.5
Actuated g/C Ratio	0.08	0.72		0.04	0.67			0.18	0.18		0.18	0.18
Clearance Time (s)	5.0	6.0		5.0	6.0			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)	144	3609		63	3412			227	288		292	288
v/s Ratio Prot	c0.04	0.41		0.01	c0.43							
v/s Ratio Perm								c0.12	0.00		0.05	0.02
v/c Ratio	0.50	0.57		0.17	0.64			0.63	0.01		0.29	0.10
Uniform Delay, d1	61.6	9.4		65.5	13.3			52.9	46.9		49.4	47.7
Progression Factor	1.08	0.97		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	0.6		1.3	0.9			5.7	0.0		0.5	0.2
Delay (s)	69.0	9.8		66.8	14.2			58.6	46.9		50.0	47.8
Level of Service	E	A		E	B			E	D		D	D
Approach Delay (s)		11.7			14.5			57.4			48.6	
Approach LOS		B			B			E			D	

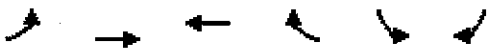
Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	2390	280	35	1510	75	110	50	50	45	95	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99			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)	1770	5005		1770	5049			1801	1583		1833	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.52	1.00		0.71	1.00
Satd. Flow (perm)	1770	5005		1770	5049			962	1583		1318	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)	144	2656	311	39	1678	83	122	56	56	50	106	144
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	45	0	0	114
Lane Group Flow (vph)	144	2959	0	39	1757	0	0	178	11	0	156	30
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4		4	4		4
Actuated Green, G (s)	15.5	89.9		7.4	81.8			26.7	26.7		26.7	26.7
Effective Green, g (s)	17.5	92.9		9.4	84.8			28.7	28.7		28.7	28.7
Actuated g/C Ratio	0.12	0.66		0.07	0.61			0.20	0.20		0.20	0.20
Clearance Time (s)	5.0	6.0		5.0	6.0			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)	221	3321		119	3058			197	325		270	325
v/s Ratio Prot	c0.08	c0.59		0.02	0.35							
v/s Ratio Perm								c0.19	0.01		0.12	0.02
v/c Ratio	0.65	0.89		0.33	0.57			0.90	0.04		0.58	0.09
Uniform Delay, d1	58.3	19.4		62.3	16.7			54.3	44.6		50.2	45.1
Progression Factor	0.95	1.28		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.5	4.0		1.6	0.8			38.2	0.0		3.0	0.1
Delay (s)	62.2	28.7		63.9	17.5			92.5	44.6		53.2	45.2
Level of Service	E	C		E	B			F	D		D	D
Approach Delay (s)		30.3			18.5			81.1			49.3	
Approach LOS		C			B			F			D	

Intersection Summary			
HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	1740	2020	140	40	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	5036		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	5036		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1933	2244	156	44	22
RTOR Reduction (vph)	0	0	4	0	0	19
Lane Group Flow (vph)	11	1933	2396	0	44	3
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	3.0	110.3	102.3		18.7	18.7
Effective Green, g (s)	5.0	113.3	105.3		20.7	20.7
Actuated g/C Ratio	0.04	0.81	0.75		0.15	0.15
Clearance Time (s)	5.0	6.0	6.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	63	4115	3788		508	234
v/s Ratio Prot	0.01	c0.38	c0.48		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.17	0.47	0.63		0.09	0.01
Uniform Delay, d1	65.5	4.1	8.2		51.5	50.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.4	0.8		0.1	0.0
Delay (s)	66.8	4.5	9.0		51.6	51.0
Level of Service	E	A	A		D	D
Approach Delay (s)		4.8	9.0		51.4	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

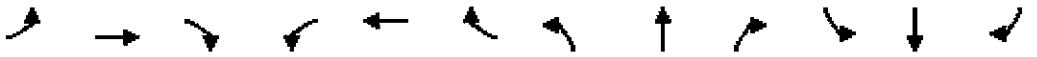


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	2320	1710	220	190	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	4998		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	4998		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	2578	1900	244	211	44
RTOR Reduction (vph)	0	0	10	0	0	38
Lane Group Flow (vph)	33	2578	2134	0	211	6
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	4.2	111.0	101.8		18.0	18.0
Effective Green, g (s)	6.2	114.0	104.8		20.0	20.0
Actuated g/C Ratio	0.04	0.81	0.75		0.14	0.14
Clearance Time (s)	5.0	6.0	6.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	78	4141	3741		490	226
v/s Ratio Prot	0.02	c0.51	0.43		c0.06	
v/s Ratio Perm						0.00
v/c Ratio	0.42	0.62	0.57		0.43	0.03
Uniform Delay, d1	65.2	4.9	7.7		54.8	51.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.7	0.7	0.6		0.6	0.1
Delay (s)	68.8	5.6	8.4		55.4	51.7
Level of Service	E	A	A		E	D
Approach Delay (s)		6.4	8.4		54.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2016 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	100	70	70	200	30	100	480	40	30	1080	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825	1583		1839	1583	1770	3499		1770	3460	
Flt Permitted		0.57	1.00		0.82	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1065	1583		1527	1583	1770	3499		1770	3460	
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)	78	111	78	78	222	33	111	533	44	33	1200	211
RTOR Reduction (vph)	0	0	56	0	0	24	0	5	0	0	13	0
Lane Group Flow (vph)	0	189	22	0	300	9	111	572	0	33	1398	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		22.6	22.6		22.6	22.6	8.0	42.4		8.0	42.4	
Effective Green, g (s)		25.6	25.6		25.6	23.6	11.0	45.4		11.0	45.4	
Actuated g/C Ratio		0.28	0.28		0.28	0.26	0.12	0.50		0.12	0.50	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		303	450		434	415	216	1765		216	1745	
v/s Ratio Prot							c0.06	0.16		0.02	c0.40	
v/s Ratio Perm		0.18	0.01		c0.20	0.01						
v/c Ratio		0.62	0.05		0.69	0.02	0.51	0.32		0.15	0.80	
Uniform Delay, d1		28.0	23.4		28.7	24.6	37.0	13.2		35.3	18.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.0	0.0		4.7	0.0	2.1	0.5		0.3	4.0	
Delay (s)		32.0	23.4		33.4	24.6	39.1	13.7		35.7	22.5	
Level of Service		C	C		C	C	D	B		D	C	
Approach Delay (s)		29.5			32.5			17.8			22.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	290	170	70	230	60	100	930	100	70	940	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	5.0	2.0	3.0		2.0	3.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1834	1583		1841	1583	1770	3488		1770	3493	
Flt Permitted		0.64	1.00		0.62	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1191	1583		1160	1583	1770	3488		1770	3493	
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)	144	322	189	78	256	67	111	1033	111	78	1044	100
RTOR Reduction (vph)	0	0	111	0	0	41	0	9	0	0	8	0
Lane Group Flow (vph)	0	466	78	0	334	26	111	1135	0	78	1136	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		34.2	34.2		34.2	34.2	6.9	31.9		6.9	31.9	
Effective Green, g (s)		37.2	37.2		37.2	35.2	9.9	34.9		9.9	34.9	
Actuated g/C Ratio		0.41	0.41		0.41	0.39	0.11	0.39		0.11	0.39	
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		492	654		479	619	195	1353		195	1355	
v/s Ratio Prot							c0.06	c0.33		0.04	0.33	
v/s Ratio Perm		c0.39	0.05		0.29	0.02						
v/c Ratio		0.95	0.12		0.70	0.04	0.57	0.84		0.40	0.84	
Uniform Delay, d1		25.5	16.3		21.8	17.0	38.0	25.0		37.3	25.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.5	0.1		4.4	0.0	3.8	6.4		1.3	6.3	
Delay (s)		52.9	16.4		26.2	17.0	41.8	31.4		38.6	31.3	
Level of Service		D	B		C	B	D	C		D	C	
Approach Delay (s)		42.4			24.6			32.3			31.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	30	430	0	40	710	400	150	10	30	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	1.00	0.95		1.00	0.95			1.00				
Frt	1.00	1.00		1.00	0.95			0.98				
Flt Protected	0.95	1.00		0.95	1.00			0.96				
Satd. Flow (prot)	1770	3539		1770	3348			1754				
Flt Permitted	0.19	1.00		0.48	1.00			0.96				
Satd. Flow (perm)	357	3539		901	3348			1754				
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)	33	467	0	43	772	435	163	11	33	0	0	0
RTOR Reduction (vph)	0	0	0	0	81	0	0	10	0	0	0	0
Lane Group Flow (vph)	33	467	0	43	1126	0	0	197	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	53.5	53.5		53.5	53.5			16.5				
Effective Green, g (s)	53.5	53.5		53.5	53.5			16.5				
Actuated g/C Ratio	0.67	0.67		0.67	0.67			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)	239	2367		603	2239			362				
v/s Ratio Prot		0.13			c0.34							
v/s Ratio Perm	0.09			0.05				0.11				
v/c Ratio	0.14	0.20		0.07	0.50			0.55				
Uniform Delay, d1	4.8	5.1		4.6	6.6			28.4				
Progression Factor	0.78	0.78		1.00	1.00			1.00				
Incremental Delay, d2	1.2	0.2		0.2	0.8			1.7				
Delay (s)	4.9	4.1		4.8	7.4			30.1				
Level of Service	A	A		A	A			C				
Approach Delay (s)		4.2			7.3			30.1			0.0	
Approach LOS		A			A			C			A	

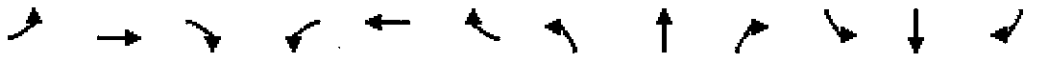
Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	40	710	10	50	880	180	350	20	70	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	1.00	0.95		1.00	0.95			1.00				
Frt	1.00	1.00		1.00	0.97			0.98				
Flt Protected	0.95	1.00		0.95	1.00			0.96				
Satd. Flow (prot)	1770	3532		1770	3449			1753				
Flt Permitted	0.17	1.00		0.31	1.00			0.96				
Satd. Flow (perm)	320	3532		576	3449			1753				
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)	43	772	11	54	957	196	380	22	76	0	0	0
RTOR Reduction (vph)	0	1	0	0	19	0	0	9	0	0	0	0
Lane Group Flow (vph)	43	782	0	54	1134	0	0	469	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)	44.0	44.0		44.0	44.0			26.0				
Effective Green, g (s)	44.0	44.0		44.0	44.0			26.0				
Actuated g/C Ratio	0.55	0.55		0.55	0.55			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)	176	1943		317	1897			570				
v/s Ratio Prot		0.22			c0.33							
v/s Ratio Perm	0.13			0.09				0.27				
v/c Ratio	0.24	0.40		0.17	0.60			0.82				
Uniform Delay, d1	9.4	10.4		8.9	12.1			24.9				
Progression Factor	0.96	0.97		1.00	1.00			1.00				
Incremental Delay, d2	3.1	0.6		1.2	1.4			9.3				
Delay (s)	12.1	10.6		10.1	13.5			34.2				
Level of Service	B	B		B	B			C				
Approach Delay (s)		10.7			13.3			34.2			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	70	40	110	130	80	70	250	80	120	400	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	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1756		1770	3411		1770	3470	
Flt Permitted	0.46	1.00	1.00	0.71	1.00		0.47	1.00		0.54	1.00	
Satd. Flow (perm)	855	1863	1583	1318	1756		873	3411		1001	3470	
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)	33	76	43	120	141	87	76	272	87	130	435	65
RTOR Reduction (vph)	0	0	34	0	37	0	0	24	0	0	9	0
Lane Group Flow (vph)	33	76	9	120	191	0	76	335	0	130	491	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	16.5	16.5	16.5	16.5	16.5		53.5	53.5		53.5	53.5	
Effective Green, g (s)	16.5	16.5	16.5	16.5	16.5		53.5	53.5		53.5	53.5	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.67	0.67		0.67	0.67	
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)	176	384	326	272	362		584	2281		669	2321	
v/s Ratio Prot		0.04			c0.11			0.10			c0.14	
v/s Ratio Perm	0.04		0.01	0.09			0.09			0.13		
v/c Ratio	0.19	0.20	0.03	0.44	0.53		0.13	0.15		0.19	0.21	
Uniform Delay, d1	26.2	26.3	25.3	27.7	28.3		4.8	4.9		5.0	5.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.49	0.52	
Incremental Delay, d2	0.5	0.3	0.0	1.1	1.4		0.5	0.1		0.6	0.2	
Delay (s)	26.7	26.5	25.4	28.9	29.7		5.3	5.0		3.0	2.8	
Level of Service	C	C	C	C	C		A	A		A	A	
Approach Delay (s)		26.2			29.4			5.0			2.9	
Approach LOS		C			C			A			A	

Intersection Summary				
HCM Average Control Delay	11.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	80.0	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				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	140	10	160	130	310	40	330	200	270	330	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	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.75	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1330	1666		1770	3339		1770	3458	
Flt Permitted	0.18	1.00	1.00	0.65	1.00		0.50	1.00		0.42	1.00	
Satd. Flow (perm)	327	1863	1583	913	1666		940	3339		782	3458	
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)	54	152	11	174	141	337	43	359	217	293	359	65
RTOR Reduction (vph)	0	0	8	0	174	0	0	68	0	0	11	0
Lane Group Flow (vph)	54	152	3	174	304	0	43	508	0	293	413	0
Confl. Peds. (#/hr)				260								
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	22.8	22.8	22.8	22.8	22.8		47.2	47.2		47.2	47.2	
Effective Green, g (s)	22.8	22.8	22.8	22.8	22.8		47.2	47.2		47.2	47.2	
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29		0.59	0.59		0.59	0.59	
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)	93	531	451	260	475		555	1970		461	2040	
v/s Ratio Prot		0.08			0.18			0.15			0.12	
v/s Ratio Perm	0.17		0.00	c0.19			0.05			c0.37		
v/c Ratio	0.58	0.29	0.01	0.67	0.64		0.08	0.26		0.64	0.20	
Uniform Delay, d1	24.5	22.3	20.5	25.3	25.0		7.0	7.9		10.8	7.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.57	1.49	
Incremental Delay, d2	8.9	0.3	0.0	6.4	2.8		0.3	0.3		5.2	0.2	
Delay (s)	33.4	22.6	20.5	31.7	27.8		7.3	8.2		22.2	11.5	
Level of Service	C	C	C	C	C		A	A		C	B	
Approach Delay (s)		25.2			28.8			8.2			15.9	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM Average Control Delay	18.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	76.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1700	10	50	1830	140	10	160	10	120	100	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00		0.95	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5081		1770	5085	1583		3529	1583	1770	3164	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5081		1770	5085	1583		3529	1583	1770	3164	
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)	333	1889	11	56	2033	156	11	178	11	133	111	267
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	10	0	240	0
Lane Group Flow (vph)	333	1900	0	56	2033	121	0	189	1	133	138	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5 8	2		1	6		3	3		4	4	
Permitted Phases						6			3			
Actuated Green, G (s)	33.6	71.0		7.0	61.4	61.4		11.9	11.9	12.1	12.1	
Effective Green, g (s)	35.6	74.0		9.0	64.4	64.4		13.9	12.9	14.1	14.1	
Actuated g/C Ratio	0.25	0.53		0.06	0.46	0.46		0.10	0.09	0.10	0.10	
Clearance Time (s)		6.0		5.0	6.0	6.0		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)	450	2686		114	2339	728		350	146	178	319	
v/s Ratio Prot	c0.19	0.37		0.03	c0.40			c0.05		c0.08	0.04	
v/s Ratio Perm						0.08			0.00			
v/c Ratio	0.74	0.71		0.49	0.87	0.17		0.54	0.01	0.75	0.43	
Uniform Delay, d1	47.9	24.8		63.3	34.0	22.1		60.0	57.7	61.2	59.2	
Progression Factor	1.00	1.00		0.99	0.62	0.52		1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.3	1.6		2.9	4.2	0.4		1.7	0.0	15.7	0.9	
Delay (s)	54.2	26.4		65.4	25.2	11.9		61.7	57.8	76.9	60.1	
Level of Service	D	C		E	C	B		E	E	E	E	
Approach Delay (s)		30.6			25.2			61.5			64.5	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	2330	5	20	1930	140	10	120	50	240	50	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	
Lane Util. Factor	1.00	*0.95		1.00	*0.95	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5307		1770	5309	1583	1770	1863	1583	1770	3086	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5307		1770	5309	1583	1770	1863	1583	1770	3086	
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)	375	2427	5	21	2010	146	10	125	52	250	52	302
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	47	0	250	0
Lane Group Flow (vph)	375	2432	0	21	2010	109	10	125	5	250	104	0
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5 8	2		1	6		4	4		3	3	
Permitted Phases						6			4			
Actuated Green, G (s)	33.8	66.2		4.8	51.0	51.0	11.9	11.9	11.9	22.3	22.3	
Effective Green, g (s)	35.8	69.2		6.8	54.0	54.0	13.9	13.9	12.9	24.3	24.3	
Actuated g/C Ratio	0.26	0.49		0.05	0.39	0.39	0.10	0.10	0.09	0.17	0.17	
Clearance Time (s)		6.0		5.0	6.0	6.0	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)	453	2623		86	2048	611	176	185	146	307	536	
v/s Ratio Prot	c0.21	0.46		0.01	c0.38		0.01	c0.07		c0.14	0.03	
v/s Ratio Perm						0.07			0.00			
v/c Ratio	0.83	0.93		0.24	0.98	0.18	0.06	0.68	0.03	0.81	0.19	
Uniform Delay, d1	49.2	33.0		64.1	42.5	28.4	57.1	60.9	57.9	55.7	49.5	
Progression Factor	1.00	1.00		0.88	0.91	0.88	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.9	7.2		1.3	14.7	0.6	0.1	9.4	0.1	15.2	0.2	
Delay (s)	65.0	40.2		57.5	53.4	25.5	57.2	70.2	58.0	70.8	49.7	
Level of Service	E	D		E	D	C	E	E	E	E	D	
Approach Delay (s)		43.5			51.6			66.1			58.4	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM Average Control Delay	48.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	87.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	80	20	440	160	20	20	120	130	50	210	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			5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.98			0.93			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	3480			3271			3413	
Flt Permitted	0.63	1.00	1.00	0.95	1.00			0.91			0.85	
Satd. Flow (perm)	1171	1863	1583	1770	3480			2995			2938	
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)	49	87	22	478	174	22	22	130	141	54	228	65
RTOR Reduction (vph)	0	0	18	0	10	0	0	97	0	0	22	0
Lane Group Flow (vph)	49	87	4	478	186	0	0	196	0	0	325	0
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)	13.3	13.3	13.3	26.6	44.9			25.1			25.1	
Effective Green, g (s)	13.3	13.3	13.3	26.6	44.9			25.1			25.1	
Actuated g/C Ratio	0.17	0.17	0.17	0.33	0.56			0.31			0.31	
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)	195	310	263	589	1953			940			922	
v/s Ratio Prot		c0.05		c0.27	0.05							
v/s Ratio Perm	0.04		0.00					0.07			c0.11	
v/c Ratio	0.25	0.28	0.01	0.81	0.10			0.21			0.35	
Uniform Delay, d1	29.0	29.2	27.9	24.4	8.1			20.2			21.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.5	0.0	8.3	0.0			0.5			1.1	
Delay (s)	29.7	29.7	27.9	32.7	8.2			20.7			22.2	
Level of Service	C	C	C	C	A			C			C	
Approach Delay (s)		29.4			25.6			20.7			22.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	350	60	500	190	80	40	200	310	70	130	40
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	1.00	1.00	1.00	0.95			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.96			0.92			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	3382			3228			3402	
Flt Permitted	0.57	1.00	1.00	0.95	1.00			0.91			0.57	
Satd. Flow (perm)	1066	1863	1583	1770	3382			2935			1961	
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)	130	380	65	543	207	87	43	217	337	76	141	43
RTOR Reduction (vph)	0	0	41	0	31	0	0	260	0	0	19	0
Lane Group Flow (vph)	130	380	24	543	263	0	0	337	0	0	241	0
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)	21.0	21.0	21.0	25.7	51.7			18.3			18.3	
Effective Green, g (s)	21.0	21.0	21.0	25.7	51.7			18.3			18.3	
Actuated g/C Ratio	0.26	0.26	0.26	0.32	0.65			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)	280	489	416	569	2186			671			449	
v/s Ratio Prot		c0.20		c0.31	0.08							
v/s Ratio Perm	0.12		0.01					0.11			c0.12	
v/c Ratio	0.46	0.78	0.06	0.95	0.12			0.50			0.54	
Uniform Delay, d1	24.8	27.3	22.1	26.6	5.4			26.9			27.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.2	7.6	0.1	26.5	0.0			2.7			4.5	
Delay (s)	26.0	34.9	22.1	53.1	5.5			29.6			31.7	
Level of Service	C	C	C	D	A			C			C	
Approach Delay (s)		31.5			36.4			29.6			31.7	
Approach LOS		C			D			C			C	

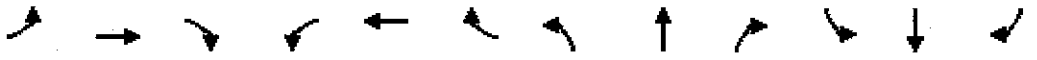
Intersection Summary				
HCM Average Control Delay	32.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	86.4%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	65	35	15	75	120	40	130	25	140	260	210
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
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3354		1770	1863	1583	1770	3454		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.56	1.00		0.65	1.00	1.00
Satd. Flow (perm)	1770	3354		1770	1863	1583	1050	3454		1203	1863	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)	54	71	38	16	82	130	43	141	27	152	283	228
RTOR Reduction (vph)	0	27	0	0	0	100	0	16	0	0	0	136
Lane Group Flow (vph)	54	82	0	16	82	31	43	152	0	152	283	92
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	3.9	15.1		1.0	12.2	12.2	20.9	20.9		20.9	20.9	20.9
Effective Green, g (s)	3.9	15.1		1.0	12.2	12.2	20.9	20.9		20.9	20.9	20.9
Actuated g/C Ratio	0.07	0.29		0.02	0.23	0.23	0.40	0.40		0.40	0.40	0.40
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)	133	974		34	437	371	422	1388		484	749	636
v/s Ratio Prot	c0.03	c0.02		0.01	c0.04			0.04			c0.15	
v/s Ratio Perm						0.02	0.04			0.13		0.06
v/c Ratio	0.41	0.08		0.47	0.19	0.08	0.10	0.11		0.31	0.38	0.14
Uniform Delay, d1	22.9	13.4		25.2	15.9	15.5	9.7	9.7		10.6	11.0	9.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.0		9.9	0.2	0.1	0.1	0.0		0.4	0.3	0.1
Delay (s)	25.0	13.5		35.2	16.1	15.6	9.8	9.8		11.0	11.3	10.0
Level of Service	C	B		D	B	B	A	A		B	B	A
Approach Delay (s)		17.3			17.2			9.8			10.8	
Approach LOS		B			B			A			B	

Intersection Summary					
HCM Average Control Delay	12.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	52.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	39.0%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

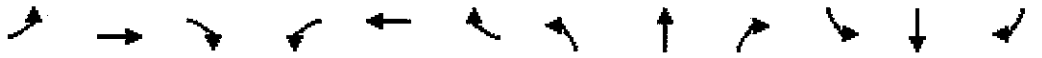
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	210	60	20	165	290	95	200	50	250	270	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3421		1770	1863	1583	1770	3433		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.47	1.00		0.58	1.00	1.00
Satd. Flow (perm)	1770	3421		1770	1863	1583	882	3433		1089	1863	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)	217	228	65	22	179	315	103	217	54	272	293	250
RTOR Reduction (vph)	0	27	0	0	0	228	0	30	0	0	0	169
Lane Group Flow (vph)	217	266	0	22	179	87	103	241	0	272	293	81
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	12.9	29.5		2.6	19.2	19.2	22.5	22.5		22.5	22.5	22.5
Effective Green, g (s)	12.9	29.5		2.6	19.2	19.2	22.5	22.5		22.5	22.5	22.5
Actuated g/C Ratio	0.19	0.42		0.04	0.28	0.28	0.32	0.32		0.32	0.32	0.32
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)	328	1450		66	514	437	285	1110		352	602	512
v/s Ratio Prot	c0.12	0.08		0.01	c0.10			0.07			0.16	
v/s Ratio Perm						0.05	0.12			c0.25		0.05
v/c Ratio	0.66	0.18		0.33	0.35	0.20	0.36	0.22		0.77	0.49	0.16
Uniform Delay, d1	26.3	12.5		32.7	20.2	19.3	18.0	17.1		21.2	18.9	16.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.9	0.1		3.0	0.4	0.2	0.8	0.1		10.1	0.6	0.1
Delay (s)	31.3	12.6		35.6	20.6	19.5	18.8	17.2		31.3	19.5	16.9
Level of Service	C	B		D	C	B	B	B		C	B	B
Approach Delay (s)		20.5			20.6			17.7			22.7	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM Average Control Delay	20.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	57.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



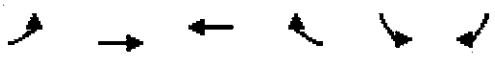
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	1750	140	10	2000	30	90	40	15	30	50	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	5029		1770	5074		1770	1785			1829	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.61	1.00			0.88	1.00
Satd. Flow (perm)	1770	5029		1770	5074		1144	1785			1646	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)	100	1944	156	11	2222	33	100	44	17	33	56	211
RTOR Reduction (vph)	0	5	0	0	1	0	0	11	0	0	0	104
Lane Group Flow (vph)	100	2095	0	11	2254	0	100	50	0	0	89	107
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	13.0	98.3		3.0	88.3		22.7	22.7			22.7	22.7
Effective Green, g (s)	15.0	101.3		5.0	91.3		24.7	24.7			24.7	24.7
Actuated g/C Ratio	0.11	0.72		0.04	0.65		0.18	0.18			0.18	0.18
Clearance Time (s)	5.0	6.0		5.0	6.0		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)	189	3638		63	3308		201	314			290	279
v/s Ratio Prot	c0.06	0.42		0.01	c0.44			0.03				
v/s Ratio Perm							c0.09				0.05	0.07
v/c Ratio	0.53	0.58		0.17	0.68		0.50	0.16			0.31	0.38
Uniform Delay, d1	59.2	9.2		65.5	15.2		52.0	48.9			50.2	50.9
Progression Factor	0.95	0.49		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	2.4	0.6		1.3	1.2		1.9	0.2			0.6	0.9
Delay (s)	58.6	5.1		66.8	16.4		54.0	49.1			50.8	51.8
Level of Service	E	A		E	B		D	D			D	D
Approach Delay (s)		7.6			16.6			52.1			51.5	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	2440	280	35	1540	90	110	50	50	60	95	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	5007		1770	5043		1770	1723			1827	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.44	1.00			0.78	1.00
Satd. Flow (perm)	1770	5007		1770	5043		821	1723			1461	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)	200	2711	311	39	1711	100	122	56	56	67	106	200
RTOR Reduction (vph)	0	10	0	0	4	0	0	28	0	0	0	161
Lane Group Flow (vph)	200	3012	0	39	1807	0	122	84	0	0	173	39
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	18.8	83.9		6.7	71.8		23.4	23.4			23.4	23.4
Effective Green, g (s)	20.8	86.9		8.7	74.8		25.4	25.4			25.4	25.4
Actuated g/C Ratio	0.16	0.67		0.07	0.58		0.20	0.20			0.20	0.20
Clearance Time (s)	5.0	6.0		5.0	6.0		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)	283	3346		118	2901		160	336			285	309
v/s Ratio Prot	c0.11	c0.60		0.02	0.36			0.05				
v/s Ratio Perm							c0.15				0.12	0.02
v/c Ratio	0.71	0.90		0.33	0.62		0.76	0.25			0.61	0.13
Uniform Delay, d1	51.7	17.9		57.9	18.3		49.4	44.2			47.7	43.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	7.8	4.4		1.6	1.0		19.1	0.4			3.6	0.2
Delay (s)	59.5	22.4		59.5	19.3		68.6	44.6			51.4	43.3
Level of Service	E	C		E	B		E	D			D	D
Approach Delay (s)		24.7			20.1			57.1			47.1	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	1790	2160	190	50	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	5024		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	5024		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	1989	2400	211	56	22
RTOR Reduction (vph)	0	0	5	0	0	19
Lane Group Flow (vph)	11	1989	2606	0	56	3
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	3.0	110.3	102.3		18.7	18.7
Effective Green, g (s)	5.0	113.3	105.3		20.7	20.7
Actuated g/C Ratio	0.04	0.81	0.75		0.15	0.15
Clearance Time (s)	5.0	6.0	6.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	63	4115	3779		508	234
v/s Ratio Prot	0.01	c0.39	c0.52		c0.02	
v/s Ratio Perm						0.00
v/c Ratio	0.17	0.48	0.69		0.11	0.01
Uniform Delay, d1	65.5	4.2	8.9		51.7	50.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.4	1.0		0.1	0.0
Delay (s)	66.8	4.6	10.0		51.8	51.0
Level of Service	E	A	A		D	D
Approach Delay (s)		4.9	10.0		51.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	30	2400	1790	300	260	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	3.0	3.0		2.5	2.5
Lane Util. Factor	1.00	0.91	0.91		0.97	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	5085	4976		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	5085	4976		3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	2667	1989	333	289	56
RTOR Reduction (vph)	0	0	13	0	0	47
Lane Group Flow (vph)	33	2667	2309	0	289	9
Turn Type	Prot	NA	NA		NA	Perm
Protected Phases	1	6	2		4	
Permitted Phases						4
Actuated Green, G (s)	5.6	109.4	99.3		20.1	20.1
Effective Green, g (s)	7.6	112.4	102.3		22.1	22.1
Actuated g/C Ratio	0.05	0.80	0.73		0.16	0.16
Clearance Time (s)	4.5	6.0	6.0		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	96	4083	3636		542	250
v/s Ratio Prot	0.02	c0.52	0.46		c0.08	
v/s Ratio Perm						0.01
v/c Ratio	0.34	0.65	0.63		0.53	0.04
Uniform Delay, d1	63.8	5.7	9.5		54.2	49.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.8	0.9		1.0	0.1
Delay (s)	65.9	6.5	10.3		55.2	50.0
Level of Service	E	A	B		E	D
Approach Delay (s)		7.3	10.3		54.4	
Approach LOS		A	B		D	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	5.5
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			