TRAFFIC IMPACT ANALYSIS REPORT FOR

PIILANI PROMENADE

IN KIHEI, MAUI, HAWAII

Prepared For

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EXHIBIT E

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1. INTRODUCTION

Phillip Rowell and Associates has been retained to update the Traffic Impact Analysis Report for the proposed Piilani Promenade project in Kihei, Maui, Hawaii. This introductory chapter discusses the location of the project, the proposed development, and the study methodology.

Project Location and Description

The following is a summary of the project:

1. The project is located along the mauka (east) side of Piilani Highway opposite Kaonoulu Street in the Kihei area of Maui. Figure 1 indicates the approximate location in the Kihei area.

2. Primary access to and egress from the project will be provided by extension of Kaonoulu Street mauka of Piilani Highway. This extension is referred to as East Kaonoulu Street. Initially, this extension will be through the project only. In the future, this road will be extended to Haleakala Highway at Haliiemaile Road, providing a connection between Kihei and Upcountry (Upcountry Highway).

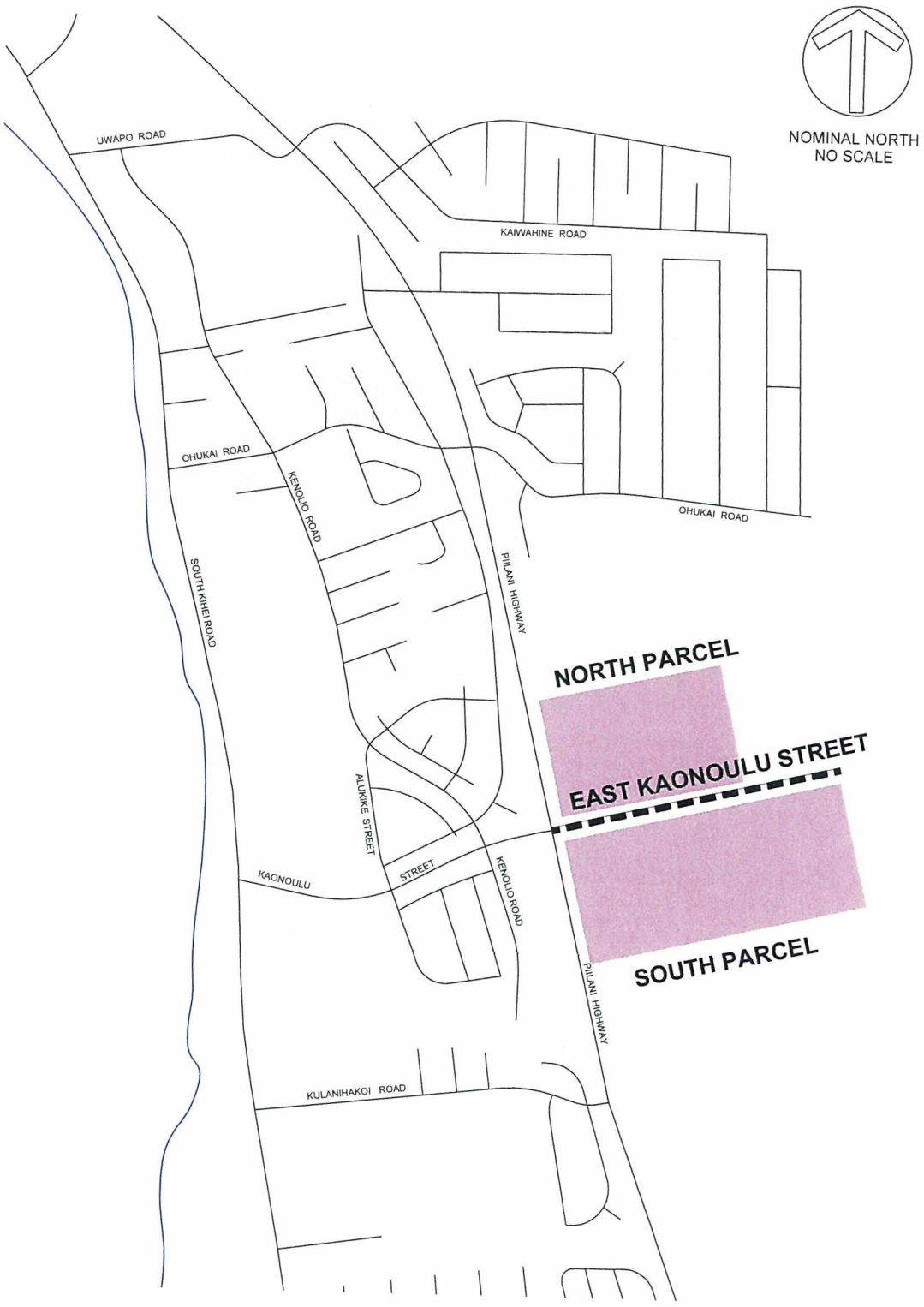

Figure 1
PROJECT LOCATION IN KIHEI

3. The extension of Kaonoulu Street will divide the project into two parcels. The north parcel will consist of approximately 100,000 square feet of business commercial, approximately 226 rental apartment units and approximately 5 acres of light industrial uses. The south parcel will consist of approximately 430,000 square feet of business commercial floor area.

4. It is understood that the objective of this project is to provide services for the tourist and residents of the Kihei area and that marketing efforts will be directed toward the South Maui area.

5. The intersection of Piilani Highway at Kaonoulu Street will be signalized and improved to accommodate additional left turn lanes, acceleration lanes and deceleration lanes. This study will determine the final lane configuration.

6. A preliminary site plan indicating the approximate locations of buildings and driveways is provided as Figure 2.

7. Estimated completion date for the project is 2018. The year 2018 is used as the design year to be consistent with other projects in the area and Institute of Transportation Engineers guidelines.

Study Methodology

The following is a summary list of the tasks performed:

1. State of Hawaii Department of Transportation officials were contacted to confirm the study area and the scope of work.

2. A field reconnaissance was performed to identify existing roadway cross-sections, intersection lane configurations, traffic control devices, and surrounding land uses.

3. Existing weekday and Saturday peak hour traffic volumes were obtained for the study intersections. Existing levels-of-service of the study intersections were determined using the methodology described in the *2000 Highway Capacity Manual*.

4. Existing traffic operating deficiencies were identified. Improvements to mitigate these deficiencies were identified and assessed.

5. A list of related development projects within and adjacent to the study area that will impact traffic conditions at the study intersections was compiled. This list included both development projects and anticipated highway improvement projects.

6. Future background traffic volumes at the study intersections without traffic generated by the study project were estimated. Intersections that are not expected to operate at acceptable levels-of-service were identified. Mitigation measures were identified and assessed.

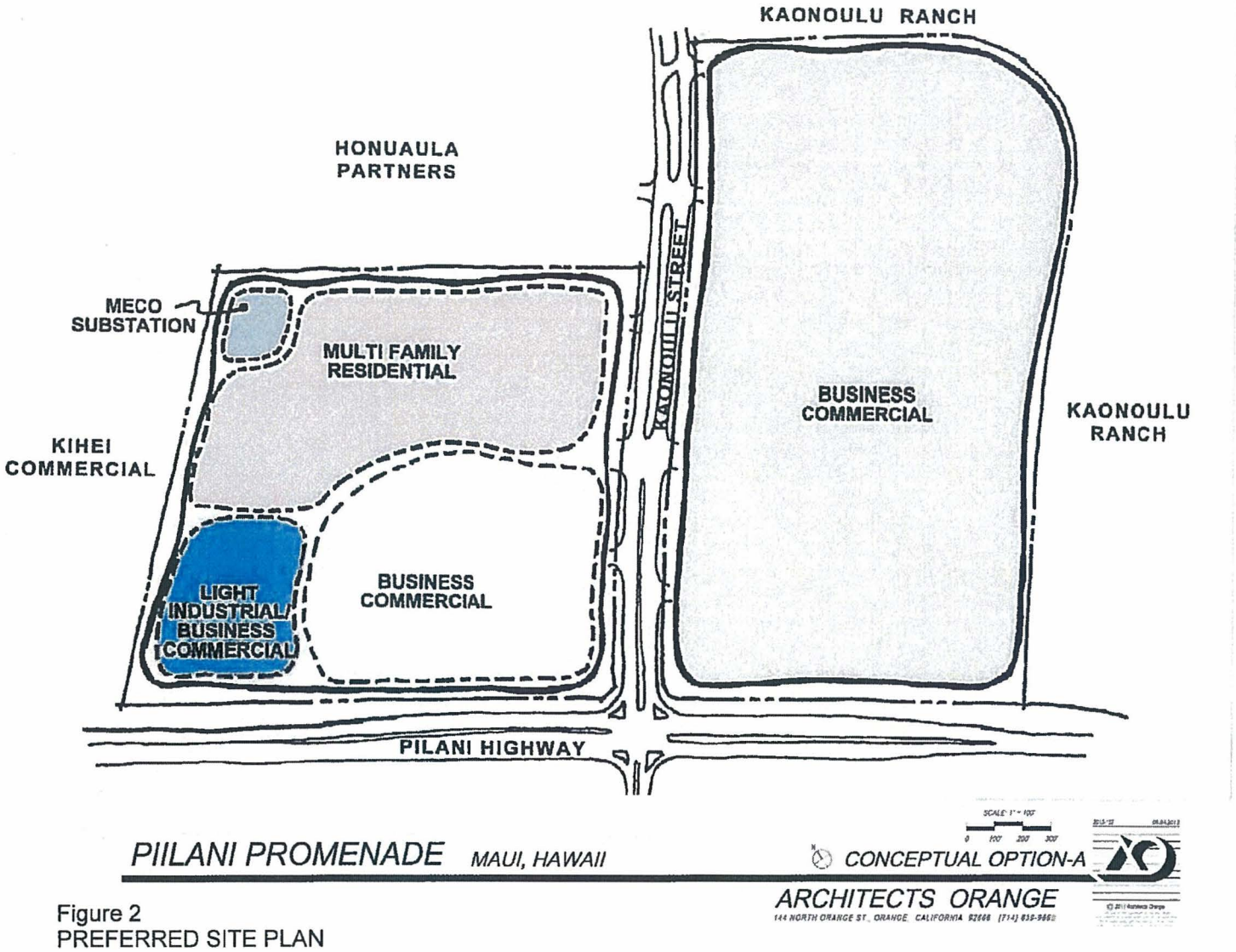

Figure 2
PREFERRED SITE PLAN

7. Peak hour traffic that the proposed project will generate was estimated using trip generation analysis procedures recommended by the Institute of Transportation Engineers. Project generated traffic was distributed and assigned to the adjacent roadway network.

8. A level-of-service analysis for future traffic conditions with traffic generated by the study project was performed.

9. The impacts of traffic generated by the proposed project at the study intersections was quantified and summarized. Locations that project generated traffic significantly impacts traffic operating conditions were identified.

10. Improvements or modifications necessary to mitigate the traffic impacts of the project and to provide adequate access to and egress from the site were identified and analyzed.

11. Based on discussions with State of Hawaii Department of Transportation, it was concluded that construction of the Upcountry Highway is not likely until after 2018, the design year for this project. To insure that the intersection of Piilani Highway at Kaonoulu Street is designed to accommodate additional traffic associated with the extension of East Kaonoulu Street, a separate analysis of this intersection was performed to determine the ultimate intersection configuration.

12. A report documenting the conclusions of the analyses performed and recommendations was prepared.

Study Area

The study area for this study is consistent with the study area used in the preparation of traffic studies for other projects in the area. The study intersections are listed in Table 1.

Table 1 Study Intersections

Number	Intersection	Jurisdiction	Existing Right-of-Way Control
1	Piilani Highway at Ohukai Road	State	Signals
2	Piilani Highway at Kaiwahine Street & Uwapo Road	State	Signals
3	Piilani Highway at Mokulele Highway & North Kihei Road	State	Signals
4	North Kihei Road at South Kihei Road	State	Signals
5	Piilani Highway at Piikea Avenue	State	Signals
6	Piilani Highway at Kaonoulu Street	State	Stop Sign
7	Kaonoulu Street at South Kihei Road	County	Stop Sign
8	Piilani Highway at Kulanihakoi Street	State	Stop Sign
9	Kaonoulu Street at Kenolio Road	County	Stop Sign
10	Kaonoulu Street at Alulike Street	County	Stop Sign

Order of Presentation

Chapter 2 describes existing traffic conditions, the Level-of-Service (LOS) concept and the results of the Level-of-Service analysis of existing conditions.

Chapter 3 describes the process used to estimate 2018 background traffic volumes and the resulting background traffic projections. Background conditions are defined as future background traffic conditions without traffic generation by the study project.

Chapter 4 describes the methodology used to estimate the traffic characteristics of the proposed project, including 2018 background plus project traffic projections.

Chapter 5 describes the traffic impacts of the proposed project, conclusions of the impact analysis and recommended mitigation measures.

Chapter 6 describes the long range traffic projections along Piilani Highway.

Chapter 7 describes the design requirements of the intersection of Piilani Highway at Kaonoulu Street and Kaonoulu Street between Piilani Highway and the east end of the project.

Chapter 8 summarizes the recommended traffic management strategies for the proposed project.

2. ANALYSIS OF EXISTING CONDITIONS

This chapter presents the existing traffic conditions on the roadways adjacent to the proposed project. The level-of-service (LOS) concept and the results of the LOS analysis for existing conditions are also presented. The purpose of this analysis is to identify existing deficiencies and to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

Existing Streets and Intersection Controls

The primary streets and roadways serving the project are Piilani Highway, South Kihei Road and Kaonoulu Street. These streets and the lane configurations of the study intersections are shown as Figure 3. Also shown are the methods of right-of-way control at the study intersections.

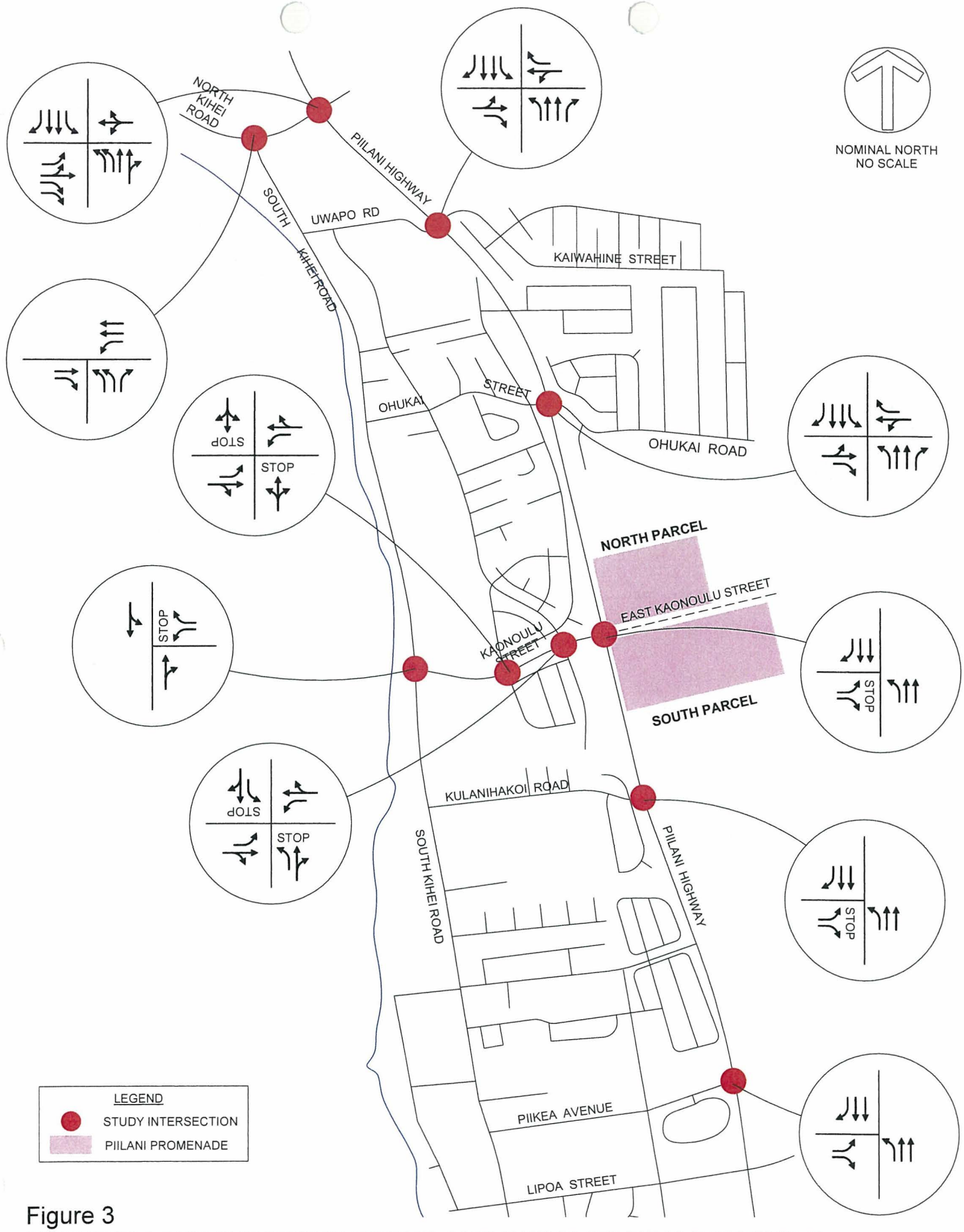

Figure 3
EXISTING LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

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Piilani Highway is a four-lane, undivided highway with a north-south orientation connecting Mokulele Highway to the north with the Wailea Resort to the south. The posted speed limit is 40 miles per hour south of Ohukai Road and 45 miles per hour north of Ohukai Road.

Ohukai Road is a basically a two-lane, two-way street, but widens to provide two approach lanes as it approaches Piilani Highway. The posted speed limit is 20 miles per hour. Both the eastbound and westbound approaches provide a through and left turn lane and a separate right turn lane. The eastbound and westbound approaches move concurrently, which means that left turns are permitted rather than protected.

Kaonoulu Street currently connects Piilani Highway with South Kihei Road. Currently, it is a two-lane, two-way street with separate left turn lanes at intersections. The posted speed limit is 20 miles per hour. The intersection with Piilani Highway is currently an unsignalized, T-intersection.

Kaiwahine Street is a two-lane, two-way residential collector street connecting the project with Piilani Highway. The posted speed limit is 20 miles per hour. Residential parking is allowed along both sides of the street.

Uwapo Road is an extension of Kaiwahine Street west of Piilani Highway to South Kihei Road. Uwapo Road is a two-lane, two-way roadway. There is no development along the north side and there are multi-family residential unit along the south side. No parking is allowed along either side. The assumed speed limit is 20 miles per hour.

Study Intersections

The intersection of Piilani Highway at Ohukai Road is located approximately 2,950 feet north of Kaonoulu Street. The intersection is a four-legged signalized intersection. The northbound and southbound approaches are Piilani Highway and the eastbound and westbound approaches are Ohukai Road. There are separate left turn lanes and separate right turn lanes along the northbound and southbound approaches of Piilani Highway. Left turns are protected. The eastbound and westbound approaches each have an optional left turn or through lane and a separate right turn lane. The eastbound and westbound approaches are split.

The intersection of Piilani Highway at Kaiwahine Street and Uwapo Road is located approximately 1,290 feet north of Ohukai Road along Piilani Highway. The intersection of a four-legged signalized intersection. The northbound and southbound approaches are Piilani Highway, the eastbound approach is Uwapo Road and the westbound approach is Kaiwahine Street. There are separate left turn lanes and separate right turn lanes along the northbound and southbound approaches of Piilani Highway. Left turns are protected. The eastbound and westbound approaches each have an optional left turn or through lane and a separate right turn lane. The eastbound and westbound left turns are permitted.

The intersection of Piilani Highway at North Kihei Road is located approximately 2,175 feet north of Uwapo Road along Piilani Highway. The intersection is a four-legged signalized intersection. The northbound approach is Piilani Highway, the southbound approach is Mokulele Highway and the eastbound and westbound approaches are North Kihei Road. The northbound approach has two left turn lanes, one through lane and an optional through or right turn lane. The southbound approach has one left turn lane, two through lanes and one right turn lane. The northbound and

southbound left turns are protected. The eastbound approach has one left turn lane, an optional left turn or through lane and two right turn lanes. Right turns are allowed on right turn green arrows only. The westbound approach is one lane only.

The intersection of North Kihei Road at South Kihei Road is located approximately 1,500 feet west of Piilani Highway along North Kihei Road. The intersection is a three-legged signalized intersection. The northbound approach is South Kihei Road. The eastbound and westbound approaches are North Kihei Road. The northbound approach has two left turn lanes and one right turn lane. The eastbound approach has one through lane and one right turn lane. The westbound approach has one left turn lane and two through lanes. The westbound left turns are protected.

The intersection of Piilani Highway at Kaonoulu Street is a three-legged unsignalized intersection. The northbound and southbound approaches are Piilani Highway and the eastbound approach is Kaonoulu Street. The northbound approach has one left turn lane and two through lanes. The eastbound approach is the STOP signed controlled approach and has one left turn lane and one right lane. The right turn is channelized.

The intersection of Piilani Highway at Kulanihakoi Road is located approximately 2,100 feet south of Kaonoulu Street along Piilani Highway. The intersection is a three-legged unsignalized intersection. The northbound and southbound approaches are Piilani Highway. The northbound approach has one left turn lane and two through lanes. The southbound approach has two through lanes and one right turn lane. The eastbound approach is Kulanihakoi Road and is the STOP sign controlled approach. The Kulanihakoi Road approach has one left turn lane and one right turn lane. The eastbound to southbound right turns are channelized.

The intersection of Piilani Highway at Piikea Avenue is located approximately 3,850 feet south of Kulanihakoi Road. The intersection is a three legged signalized intersection. The northbound and southbound approaches are Piilani Highway and the eastbound approach is Piikea Avenue. The northbound approach as one left turn lane and two through lanes. The northbound left turns are protected. The southbound approach has two through lanes and one right turn lane. The eastbound approach has one left turn lane and one right turn lane.

The intersection of South Kihei Road at Kaonoulu Street is located approximately 3,230 along Kaonoulu Street west of Piilani Highway. The intersection is a three legged, STOP sign controlled intersection. The northbound and southbound approaches are South Kihei Road. The northbound approach has one optional through or right turn lane. The southbound approach has one optional left turn or through lane. The westbound approach is Kaonoulu Street and is the controlled approach. The westbound approach has one left turn lane and one right turn lane.

The intersection of Kaonoulu Street at Kenolio Road is located approximately 500 feet along Kaonoulu Street west of Piilani Highway. The intersection is a four legged STOP sign controlled intersection. The eastbound and westbound approaches are Kaonoulu Street and the northbound and southbound approaches are Kenolio Road. The northbound and southbound approaches are the controlled approaches. Each approach has a left turn lane and an optional through or right turn lane.

The intersection of Kaonoulu Street at Alulike Street is located approximately 830 feet west of Kenolio Street. The intersection is a four legged STOP sign controlled intersection. The eastbound

and westbound approaches each have one left turn lane and an optional through or right turn lane. The northbound and southbound approaches are the controlled approaches and has one left turn, through or right turn lane.

Existing Peak Hour Traffic Volumes

The existing peak hour traffic volumes are shown in Figures 4, 5 and 6.

1. Generally, the traffic counts were performed during May 2013. The intersection of Piilani Highway at Piikea Avenue was added to the study area in response to comments from State of Hawaii Department of Transportation. The counts were performed in October 2013.

2. The traffic counts include buses, trucks, motorcycles, mopeds and other large vehicles. Bicycles and pedestrians were not counted.

3. Generally, the weekday traffic counts were performed between 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM on either a Tuesday or Thursday. Several of the intersections were recounted and the recounts were performed on other days because of scheduling or unusual traffic conditions in or adjacent to the intersection. Counts that were performed on days other than Tuesday or Thursday were compared to counts of adjacent intersections to confirm consistency. If the counts were inconsistent, the intersection was recounted again.

4. Saturday traffic counts were performed from 10:00 AM to 2:00 PM with the exceptions of the intersections of North Kihei Road at South Kihei Road, Kaonoulu Street at Kenolio Road and Kaonoulu Street at Alulike Street. The intersections were counted for a shorter time period based on the counts at adjacent intersections.

5. The traffic volumes shown are the peak hourly volume of the total intersection. The traffic volumes of adjacent intersections may not match the volumes shown for an adjacent intersection because the peak hours of the adjacent intersections may not coincide and there are driveways between the intersections.

6. Pedestrian activity was negligible at the study intersections during the traffic counts.

The traffic count summary worksheets are provided as Appendix A.

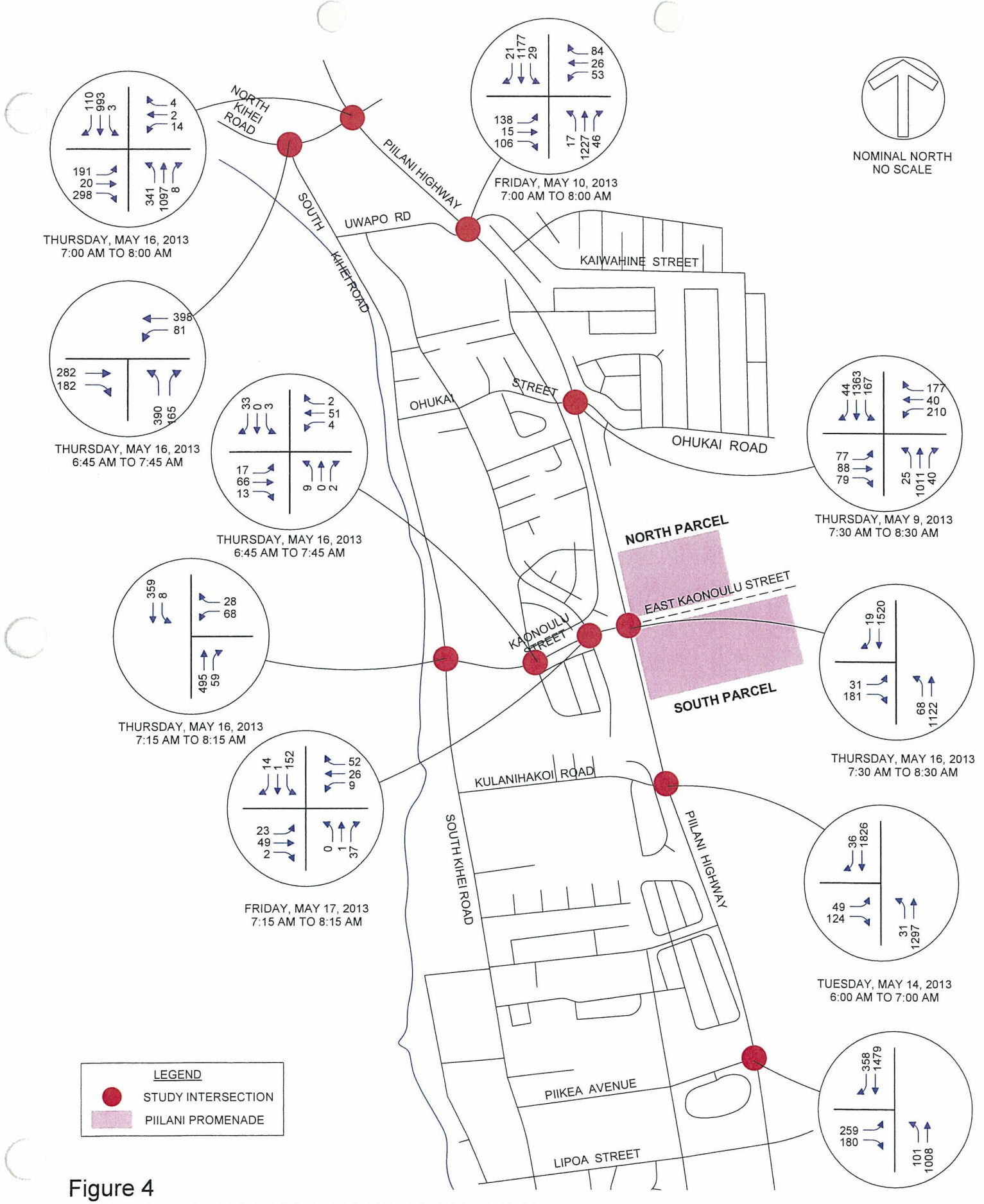

Figure 4
2013 WEEKDAY AM PEAK HOUR VOLUMES

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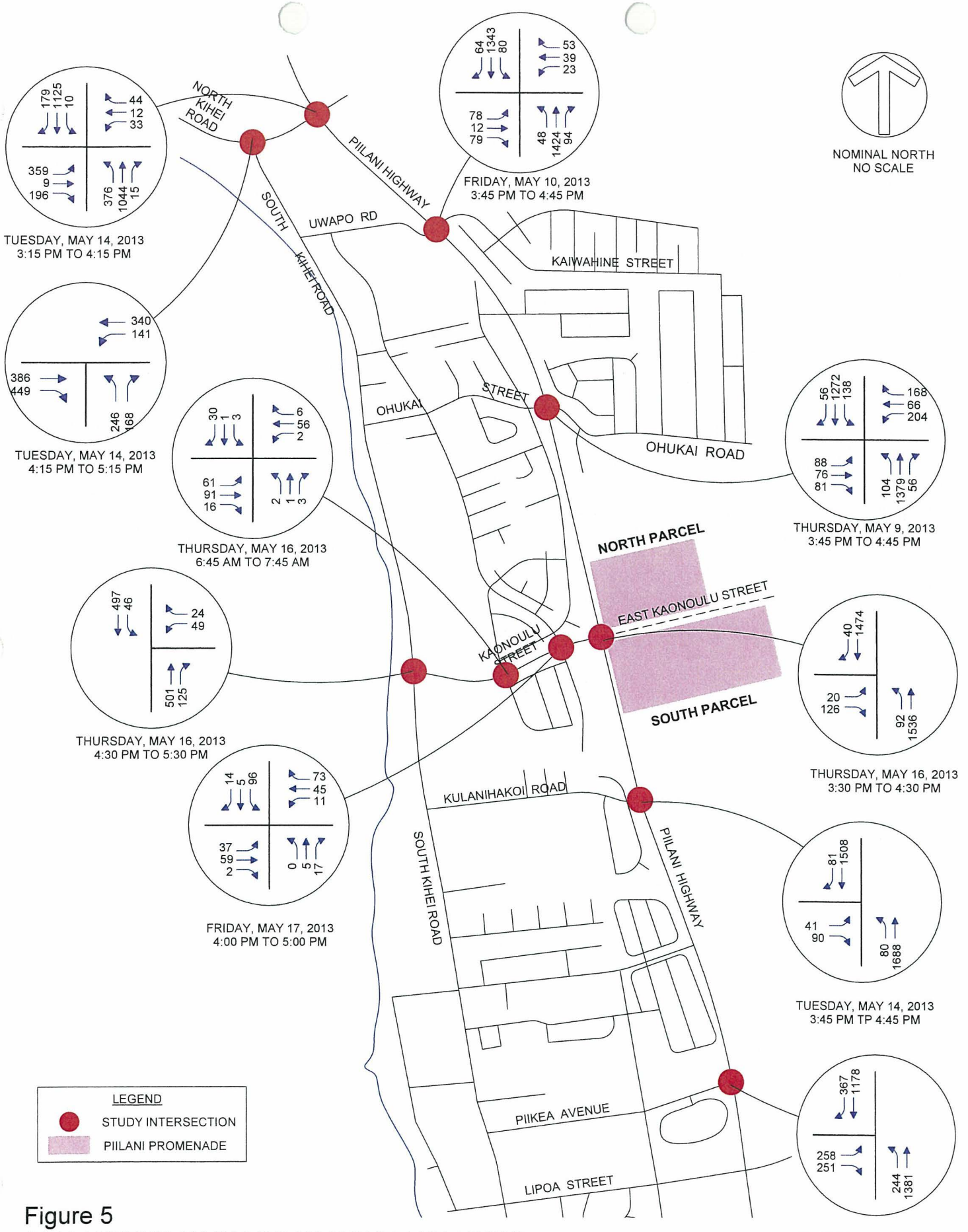

Figure 5
2013 WEEKDAY PM PEAK HOUR VOLUMES

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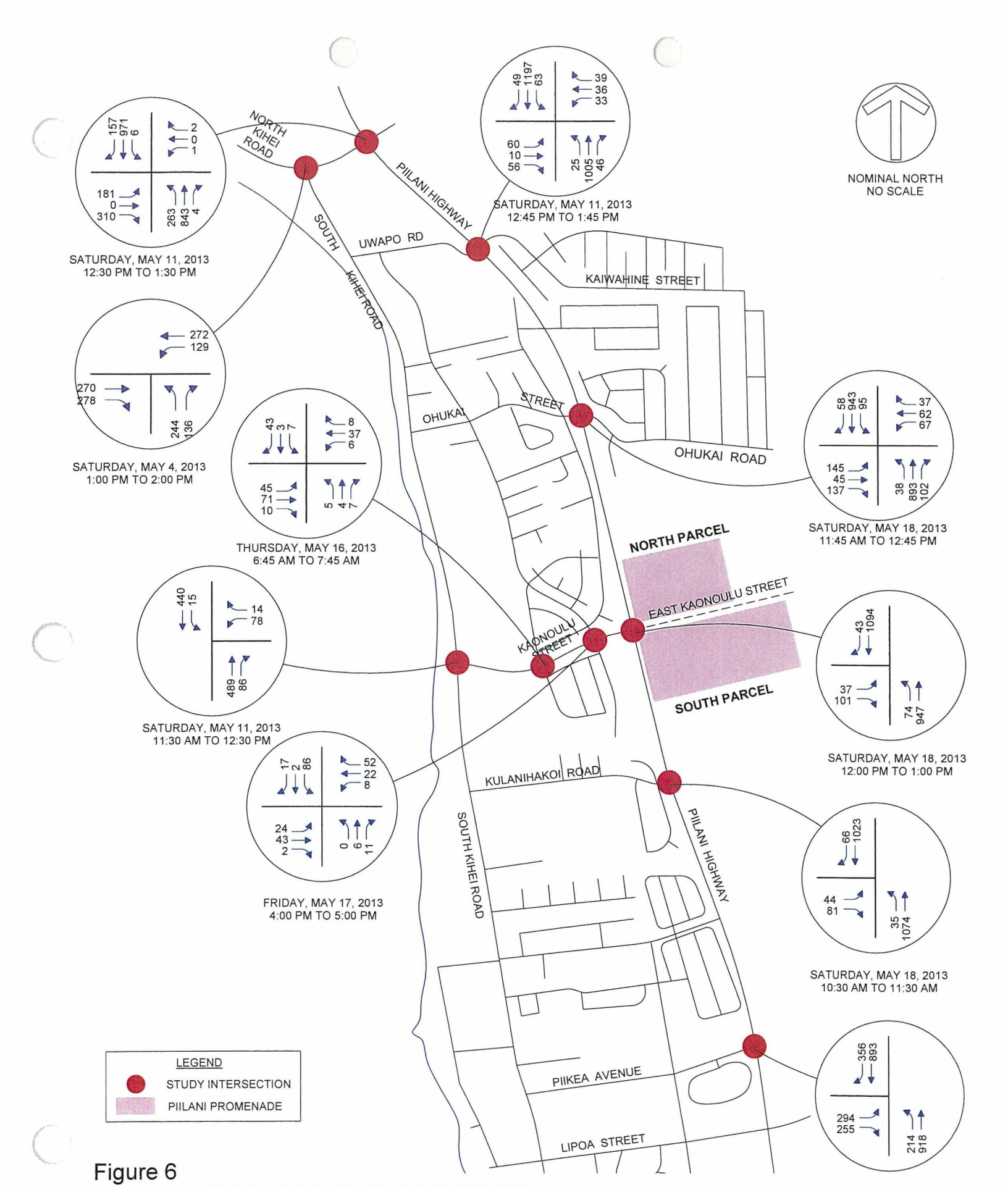

Figure 6
2013 SATURDAY PEAK HOUR VOLUMES

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Level-of-Service Concept

Signalized Intersections

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 2. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.[1]

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 2 Level-of-Service Definitions for Signalized Intersections(1)

Level of Service	Interpretation	Volume-to-Capacity Ratio(2)	Stopped Delay (Seconds)
A	Uncongested operations; all vehicles clear in a single cycle.	0.000 - 0.700	< 10.0
B			10.1 - 20.0
C	Light congestion; occasional backups on critical approaches	0.701 - 0.800	20.1 - 35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801 - 0.900	35.1 - 55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901 - 1.000	55.1 - 80.0
F	Total breakdown with stop-and-go operation	> 1.001	> 80.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

[1] Institute of Transportation Engineers, *Transportation Impact Analyses for Site Development*, Washington, D.C., 2006, page 56 - 60

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 3 summarizes the definitions for level-of-service and the corresponding delay.

Table 3 Level-of-Service Definitions for Unsignalized Intersections(1)

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

Methodology for Level-of-Service Analysis

1. Synchro 6 was used to analyze the study intersections, which is based on the *Highway Capacity Manual.*

2. The *Highway Capacity Manual* methodology does not report a volume-to-capacity ratio for unsignalized intersections or results for the overall unsignalized intersection. Synchro 6 reports an overall delay for unsignalized intersections. This overall intersection delay and the corresponding level-of-service from the table above is shown in the following tables for unsignalized intersections.

3. As the *Highway Capacity Manual* defines level-of-service by delay, we have used the same definitions.

2013 Levels-of-Service Analysis

The existing levels-of-service of the signalized study intersections are summarized in Table 4. The results shown in the table are the volume-to-capacity ratios, delays and levels-of-service of the overall intersections as reported by the *Highway Capacity Software.*

Table 4 2013 Levels-of-Service of Signalized Intersections

Intersection and Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Highway at Ohukai Road	***0.95***	***46.7***	***D***	***0.87***	***50.3***	***D***	***0.88***	***29.7***	***C***
Eastbound Left & Thru	0.88	80.6	F	0.97	122.0	F	0.85	50.1	D
astbound Right	0.08	46.8	D	0.06	60.4	E	0.11	26.6	C
Westbound Left & Thru	**1.05**	**116.6**	**F**	**0.91**	**84.4**	**F**	**0.71**	**37.9**	**D**
Westbound Right	0.13	44.4	D	0.12	49.4	D	0.03	26.7	C
Northbound Left	0.36	61.1	E	0.70	67.9	E	0.60	40.8	D
Northbound Thru	0.86	31.7	C	0.87	47.5	D	0.92	32.5	C
Northbound Right	0.04	13.0	B	0.08	30.4	C	0.10	15.2	B
Southbound Left	0.91	100.0	F	0.71	90.1	F	0.68	40.9	D
Southbound Thru	0.97	37.3	D	0.85	33.6	C	0.82	23.4	C
Southbound Right	0.06	2.6	A	0.08	7.4	A	0.05	12.9	B
Piilani Highway at Kaiwahine Street	***0.69***	***32.0***	***C***	***0.64***	***33.3***	***C***	***0.55***	***10.4***	***B***
Eastbound Left & Thru	0.87	77.6	E	0.82	93.9	F	0.55	30.0	C
Eastbound Right	0.11	41.4	D	0.06	58.0	E	0.05	24.2	C
Westbound Left & Thru	0.61	52.2	D	0.51	63.5	E	0.43	27.4	C
Westbound Right	0.06	40.9	D	0.04	57.8	E	0.03	24.1	C
Northbound Left	0.28	31.8	C	0.50	57.2	E	0.49	30.5	C
Northbound Thru	0.64	30.3	C	0.61	32.6	C	0.51	7.5	A
Northbound Right	0.04	42.6	D	0.07	36.3	D	0.03	5.1	A
Southbound Left	0.38	45.1	D	0.60	51.4	D	0.55	30.9	C
Southbound Thru	0.57	23.1	C	0.54	22.2	C	0.59	7.7	A
Southbound Right	0.02	12.9	B	0.05	26.9	C	0.05	4.7	A
Piilani Highway at North Kihei Road	***0.66***	***30.5***	***C***	***0.86***	***48.0***	***D***	***0.58***	***16.6***	***B***
Eastbound Left	0.70	70.8	E	0.82	65.4	E	0.55	31.2	C
Eastbound Left & Thru	0.72	72.0	E	0.86	71.2	E	0.55	31.0	C
Eastbound Right	0.22	26.7	C	0.09	134.3	F	0.15	15.2	B
Westbound Left, Thru & Right	0.31	60.0	E	0.84	83.6	F	0.06	32.4	C
Northbound Left	0.71	41.2	D	0.89	77.4	E	0.55	27.0	C
Northbound Thru & Right	0.54	19.2	B	0.61	15.3	B	0.45	8.3	A
Southbound Left	0.73	172.3	F	0.57	86.1	F	0.60	62.4	E
Southbound Thru	0.66	27.0	C	0.82	41.6	D	0.70	17.9	B
Southbound Right	0.08	18.1	B	0.18	25.7	C	0.11	12.0	B
North Kihei Road at South Kihei Road	***0.39***	***19.5***	***B***	***0.53***	***22.4***	***C***	***0.51***	***10.4***	***B***
Eastbound Thru	0.27	9.7	A	0.54	29.3	C	0.39	9.9	A
Eastbound Right	0.14	8.6	A	0.30	24.5	C	0.20	8.7	A
Westbound Left	0.59	57.3	E	0.58	25.4	C	0.70	26.6	C
Westbound Thru	0.17	1.3	A	0.16	3.7	A	0.13	3.3	A
Northbound Left	0.75	54.2	D	0.32	44.2	D	0.47	16.7	B
Northbound Right	0.13	0.0	A	0.12	0.0	A	0.11	0.0	A
Piilani Highway at Piikea Avenue	***0.71***	***19.2***	***B***	***0.98***	***19.8***	***B***	***0.73***	***16.3***	***B***
Eastbound Left	0.87	71.2	E	0.99	113.8	F	0.76	29.4	C
Eastbound Right	0.51	47.4	D	0.66	71.8	E	0.17	18.5	B
Northbound left	0.67	27.9	C	0.96	57.8	E	0.74	32.7	C
Northbound Thru	0.41	6.0	A	0.54	6.7	A	0.45	6.4	A
Southbound Thru	0.60	12.0	B	0.46	1.7	A	0.71	18.7	B
Southbound Right	0.25	31.3	C	0.25	0.8	A	0.24	13.4	B

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix B for Level-of-Service Analysis Worksheets.

The results of the Level-of-Service analysis of the study intersections are summarized in Table 5. The methodology for unsignalized intersections does not calculate the volume-to-capacity ratio of the controlled movements or the overall intersection. Shown in the table are the average vehicle delays and levels-of-service of the controlled movements and the weighted delay and corresponding level-of-service of the overall intersection. The weighted delays consider traffic using the uncontrolled lane groups, which has no delay because these movements do not stop or yield, and therefore indicate a lower delay than the controlled movements, even though the controlled movement may have a delay implying Level-of-Service E to F.

Table 5 2013 Levels-of-Service of Unsignalized Intersections

	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
Intersection and Movement	Delay [1]	LOS [2]	Delay	LOS	Delay	LOS
Piilani Highway at Kaonoulu Street	***11.5***	***B***	***1.8***	***A***	***1.7***	***A***
Eastbound Left	72.3	F	36.0	E	24.0	C
Eastbound Right	122.6	F	24.2	C	15.6	C
Northbound Left	20.7	C	16.9	C	12.4	B
South Kihei Road at Kaonoulu Street	***2.7***	***A***	***2.9***	***A***	***3.2***	***A***
Westbound Left	29.6	D	42.7	E	32.7	D
Westbound Right	13.5	B	12.8	B	12.5	B
Southbound Left	0.6	A	1.9	A	0.6	A
Piilani Highway at Kulanihakoi Street	***5.0***	***A***	***2.0***	***A***	***1.4***	***A***
Eastbound Left	159.2	0	62.5	F	23.7	C
Eastbound Right	44.2	E	24.0	C	15.0	C
Northbound Left	24.4	C	19.3	C	11.8	B
Kaonoulu Street at Kenolio Road	***7.5***	***A***	***5.4***	***A***	***5.7***	***A***
Eastbound Left	7.5	A	7.6	A	7.5	A
Westbound Left	7.4	A	7.5	A	7.4	A
Northbound Left	0.0	A	0.0	A	0.0	A
Northbound Thru & Right	9.1	A	10.0	B	9.6	A
Southbound Left	14.5	B	14.4	B	12.2	B
Southbound Thru & Right	9.1	A	10.2	B	9.1	A
Kaonoulu Street at Alulike Street	***3.8***	***A***	***3.4***	***A***	***5.0***	***A***
Eastbound Left	7.4	A	7.5	A	7.5	A
Westbound Left	7.4	A	7.5	A	7.5	A
Northbound Left, Thru & Right	10.2	B	11.3	A	10.9	B
Southbound Left, Thru & Right	9.0	A	9.5	A	10.2	B

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix B for Level-of-Service Analysis Worksheets.

Existing Deficiencies

For signalized intersections, Level-of-Service D is the minimum acceptable Level-of-Service[2] and that this standard is applicable to the overall intersection and major through movements. Minor movements, such as left turns, and minor side street approaches may operate at Level-of-Service E or F for short periods of time during the peak hours so that the overall intersection and major movements along the major highway will operate at Level-of-Service D, or better. All volume-to-capacity ratios must be 1.00 or less[3].

A standard has not be established for unsignalized intersections. Therefore, we have used a standard that Level-of-Service D is an acceptable level-of-service for major controlled lane groups, such as left turns from a major street to a minor street. Side street approaches may operate at Level-of-Service E or F for short periods of time. This is determined from the delays of the individual lane groups. If the delay of any of the side street approaches appears to be so long that it will affect the overall level-of-service of the intersection, then mitigation measures should be accessed.

Using this standard, the following deficiencies were identified:

At the intersection of Piilani Highway at Ohukai Road, the westbound left and through lane group operates at Level-of-Service F during the morning peak hour. The volume-to-capacity ratio is 1.05 and the average vehicle delay is 116.6. This lane group operates at Level-of-Service F during the afternoon peak hour and Level-of-Service D during the Saturday peak hour, but the volume-to-capacity ratio is less than 1.00.

[2] Institute of Transportation Engineers, *Transportation Impact Analyses for Site Development: A Recommended Practice*, 2006, page 60.

[3] Transportation Research Board, *Highway Capacity Manual*, Washington, D.C., 2000, p. 16-35.

3. PROJECTED BACKGROUND TRAFFIC CONDITIONS

The purpose of this chapter is to discuss anticipated 2018 background conditions without project generated traffic. Background traffic conditions are defined as future traffic projections without traffic generated by the proposed project, Piilani Promenade.

Future traffic projections without project generated traffic are first estimated. Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. This growth also considers traffic associated with minor, or small, projects for which no traffic data, or traffic study, are available. The second component is estimated traffic that will be generated by other major development projects in the vicinity of the proposed project. Included in the assessment of future background conditions are roadway improvements that are part of the related projects.

A level-of-service of future (2018) background traffic conditions is then performed and existing deficiencies identified.

Design Year for Traffic Forecasts

The design, or horizon, year of a project is the future year for which background traffic conditions are estimated. The design year is typically several years after completion of the study project. The year 2018 is used in this study to be compatible with the traffic studies for other major projects within and adjacent to the study area.

Background Traffic Growth

The *Maui Long Range Transportation Plan*[4] concluded that traffic in Maui would increase an average of 1.6% per year from 1990 to 2020. This growth rate was used to estimate the background growth between 2013 and 2018, which is the design year for this project. The growth factor was calculated using the following formula:

$$F = (1 + i)^n$$

where F = Growth Factor
i = Average annual growth rate, or 0.016
n = Growth period, or 5 years

It should be noted that some traffic studies for project in Kihei have used a growth factor of 2.0% rather that 1.6% used in the study. We have checked with the other consultants and verified that this is the result of rounding.

This growth factor was applied to the northbound and southbound through traffic movements at the study intersections along Piilani Highway and South Kihei Road. All increases of turning movement traffic volumes and side street approach volumes will be the result of traffic generated by related projects, not the result of regional traffic growth.

Related Projects

The second component in estimating background traffic volumes is traffic resulting from other proposed projects in the vicinity. Related projects are defined as those projects that are under construction or have been approved for construction and would significantly impact traffic in the study area. Related projects may be development projects or roadway improvements. The following related projects were identified.

A. Kaiwahine Village

The proposed Kaiwahine Subdivision is located at the east end of Kaiwahine Drive and will consist of 120 multi-family units. The traffic assignments for the subdivision were obtained from the traffic study for the project[5].

B. Maui Lu Resort

Maui Lu Resort is located in the northeast quadrant of the intersection of South Kihei Road at Kaonoulu Street. The existing resort will be demolished and a 400 unit timeshare will be constructed. Each timeshare unit will have one lock off unit which may be used as a separate hotel room. As part of the Maui Lu project, the intersection of South Kihei Road at Kaonoulu Street will be signalized. A separate southbound to eastbound left turn lane will also be constructed.

[4] Kaku Associates, *Maui Long Range Land Transportation Plan*, October 1996

[5] Phillip Rowell and Associates, *TIAR for Kaiwahine Village*, July 15, 2010

Groundbreaking is scheduled for 2014. The traffic assignments for the project were obtained from the traffic study for the project[6].

C. Kihei Residential Subdivision

The Kihei Residential Subdivision will be located along the east side of Piilani Highway between Kaiwahine Street and North Kihei Road. The project will consist of 400 single family units, 200 multifamily units, 2,000 square feet of commercial floor area and 7,000 square feet of office floor area. The traffic assignments for the project were obtained from the traffic study for the project[7]. The TIAR provided weekday peak hour assignments. Saturday peak hour assignments were calculated using the project description provided in the TIAR.

Primary access to and egress from this project is via the intersection of Piilani Highway at Kaiwahine Street. The TIAR includes the improvements at this intersection to accommodate project generated traffic. These improvements are:

a. Modify the eastbound approach of Uwapo Road to provide separate left, through and right turn lanes.

b. Modify the westbound approach of Kaiwahine Street to provide two left turn lanes, one through lane and one right turn only lane.

c. Modify the southbound approach of Piilani Highway to provide two separate left turn lanes.

D. Kihei High School

The proposed Kihei High School will be located along the east side of Piilani Highway across from the Piilani Subdivision. According to the Environmental Impact Statement, the school will have a capacity of approximately 1600 students for grades 9 through 12. The development of the school will be in two phases with 800 students in each phase. Phase 1 will be completed in 2015 and Phase 2 in 2025.

Access and egress will be via the intersection of Piilani Highway at Kulanihakoi Road, which will be modified with an extension of Kulanihakoi Road across Piilani Highway. The intersection of Piilani Highway at Kulanihakoi Street will be signalized.

The number of trips that the high school will generate during weekday peak hours was obtained from the TIAR[8] for the project. Based on trip generation data provided in *Trip Generation*, the number of trips generated on a Saturday will be negligible.

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[6] Phillip Rowell and Associates, *TIAR for Maui Lu Resort*, March 7, 2007

[7] Austin, Tsutsumi & Associates, *TIAR for Kihei Residential Project*, May 22, 2007

[8] Wilson Okamoto Corporation, *Traffic Impact Report Kihei High School*, September 2011

E. Kenolio 6 Affordable Housing Project

The Kenolio 6 Affordable Housing Project is located between Piilani Highway and Kenolio Road in the southwest quadrant of the intersection of Kaonoulu Street at Piilani Highway. The project is a 124 unit multi-family affordable housing development. It is anticipated that the project will be completed in 2016.

Access to and egress from will be via two driveways along the east side of Kenolio Road. The first driveway, referred to as Drive A, is south of the intersection of Kenolio Road at Hoopili Akau Street. Drive B is south of Drive A along Kenolio Road.

The traffic assignments for the project were obtained from the traffic study for the project [9].

The projects that were identified as related projects and the estimated number of peak hour trips generated by each are summarized in Table 6. The approximate locations of these projects are shown in Figure 7.

Table 6 Trip Generation Summary of Related Projects

			AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	Related Project	Description	In	Out	Total	In	Out	Total	In	Out	Total
A	Kaiwahine Village	120 Multi-Family	19	47	66	49	31	80	26	26	52
B	Maui Lu Resort	400 Timeshares + 400 Lock Off Units (Maximum)	245	140	385	205	230	435	350	275	625
C	Kihei Residential	400 Single Family 200 Multi-Family 2,000 SF Commercial 7,000 SF Office	213	403	616	405	332	737	400	355	755
D	Kihei High School (Phase 1)	800 Students Grades 9 thru 12	228	108	336	104	55	159	0	0	0
E	Kenolio 6 Affordable Housing Project	124 Multi-Family	20	48	68	51	32	83	32	32	64
TOTALS FOR 2018			725	746	1,471	814	680	1,494	808	688	1,496

2018 Background Traffic Projections

2018 background traffic projections were calculated by expanding existing traffic volumes by the appropriate growth rates and then superimposing traffic generated by related projects. The resulting 2018 background peak hour traffic projections are shown in Figures 8, 9 and 10.

[9] Phillip Rowell and Associates, *TIAR for Kenolio 6 Affordable Housing Project*, May 27, 2010

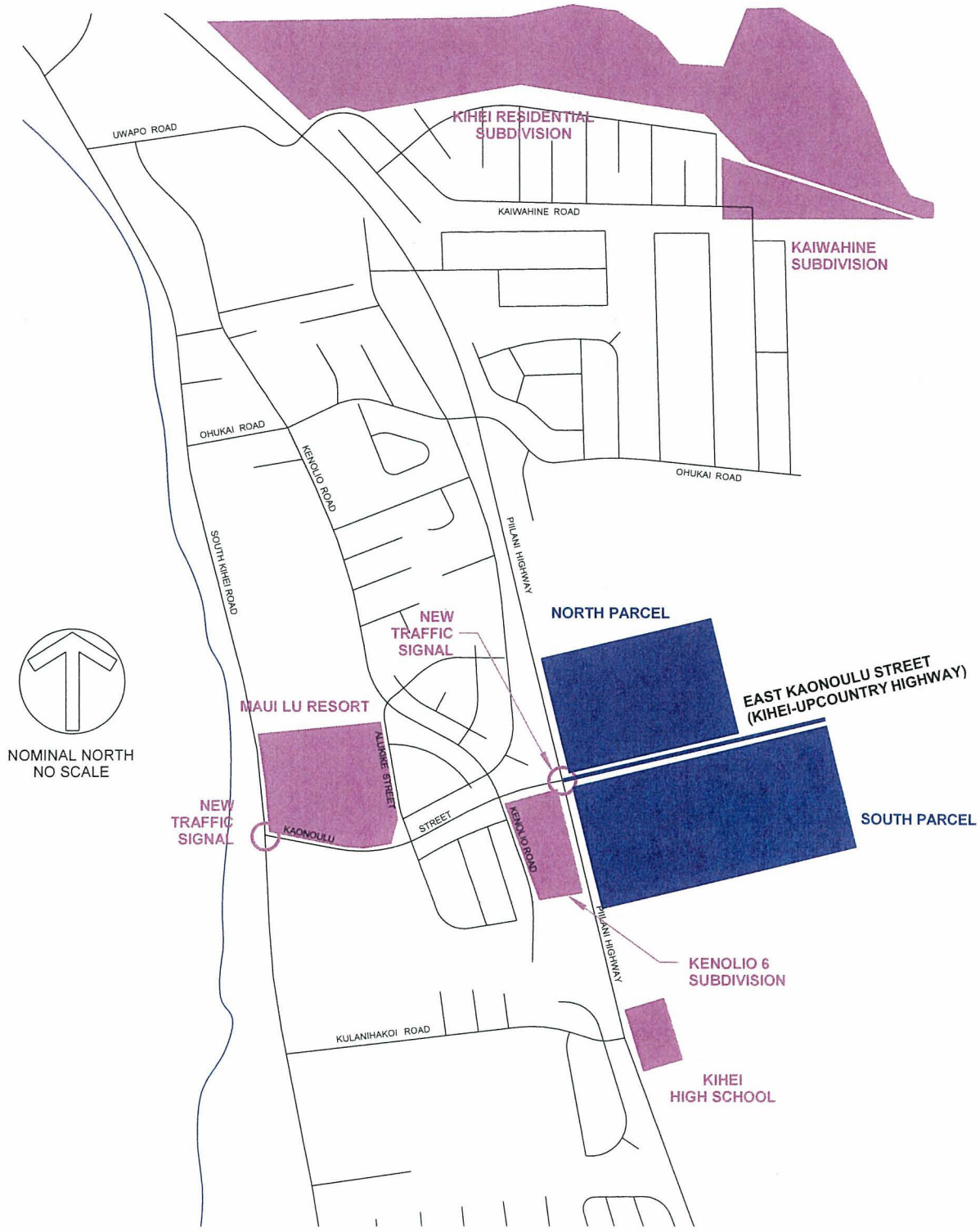

Figure 7
LOCATIONS OF RELATED PROJECTS

Phillip Rowell and Associates

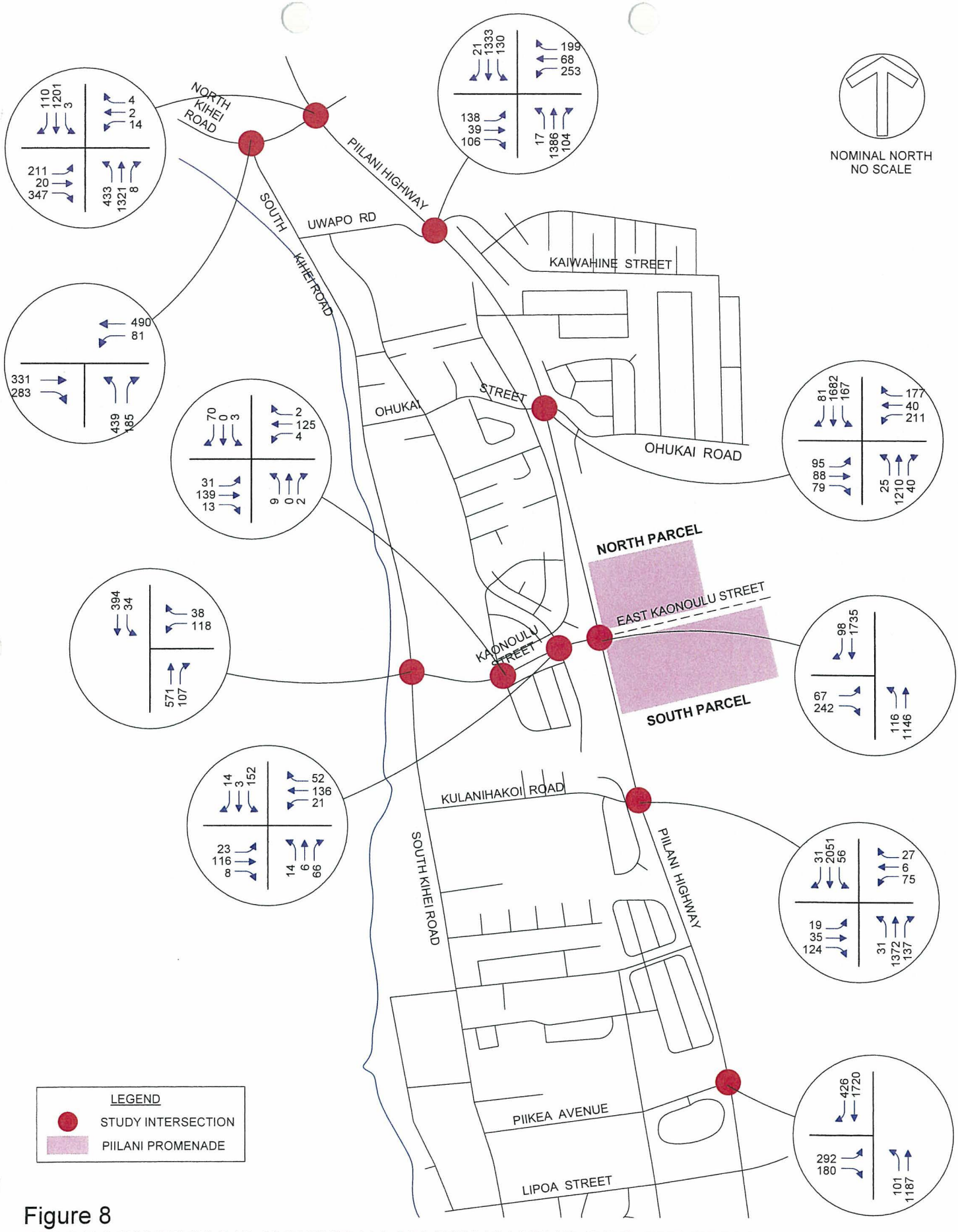

Figure 8
2018 BACKGROUND WEEKDAY AM PEAK HOUR PROJECTIONS

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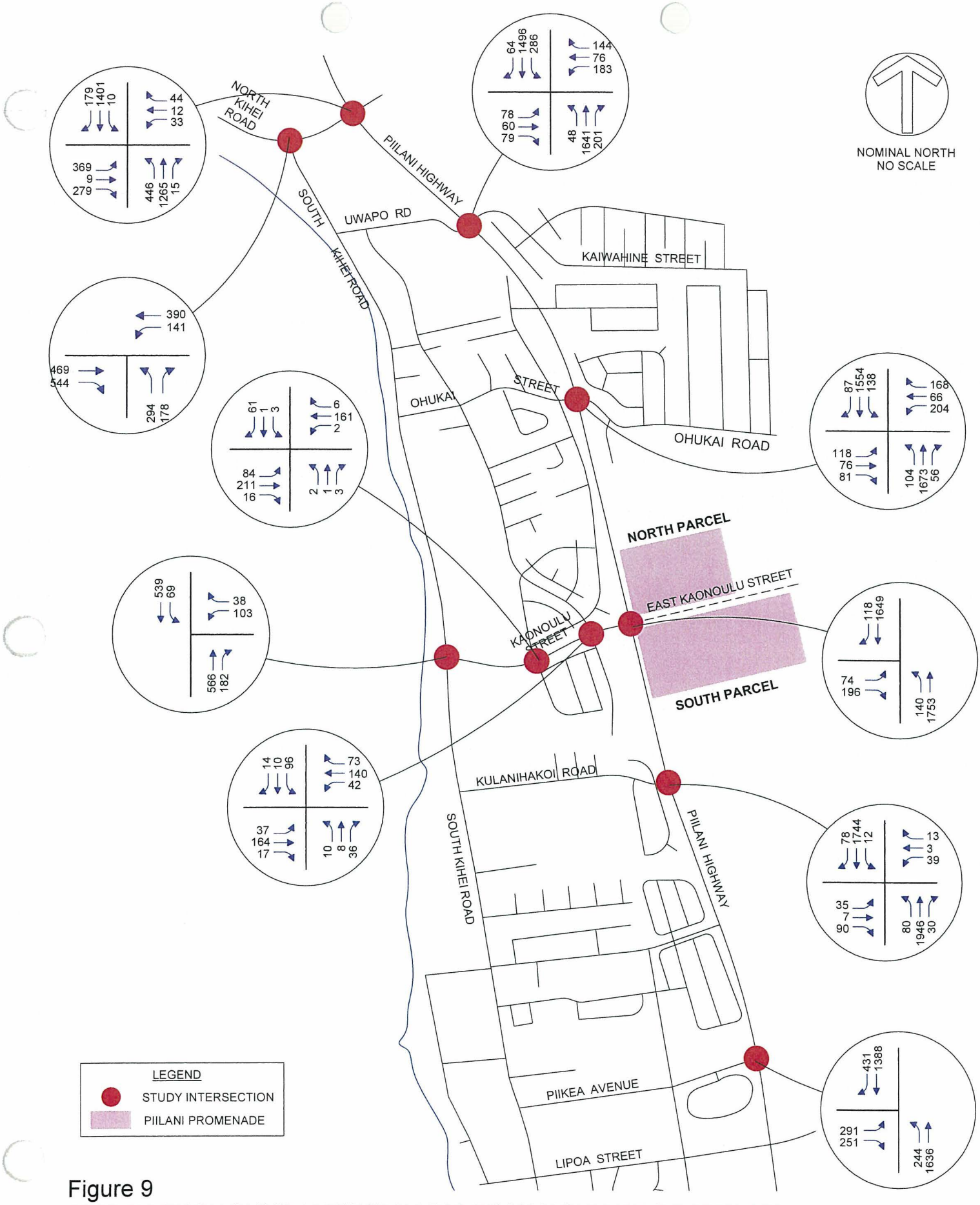


Figure 9
2018 BACKGROUND WEEKDAY PM PEAK HOUR PROJECTIONS

Phillip Rowell and Associates

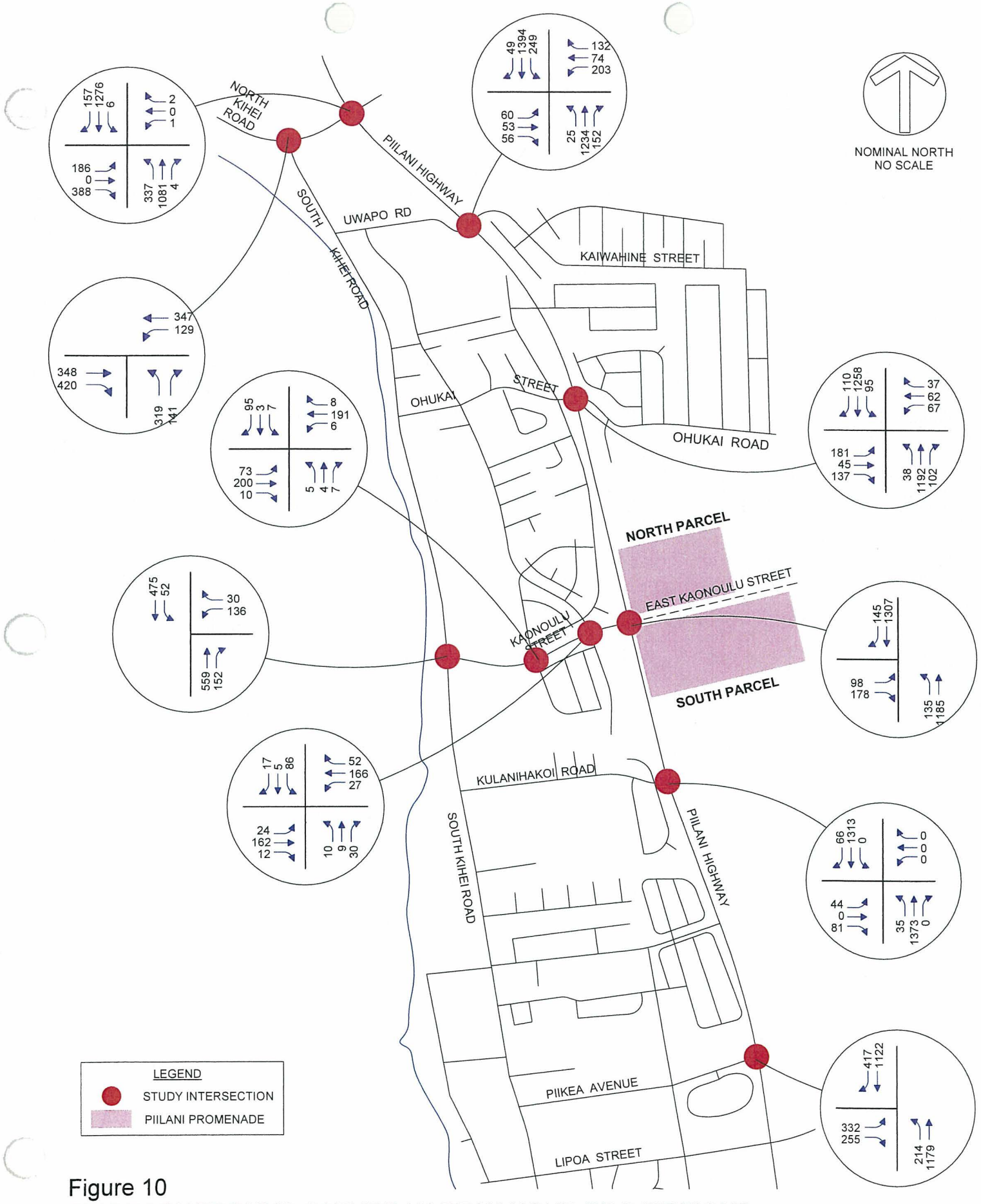


Figure 10
2018 BACKGROUND SATURDAY PEAK HOUR PROJECTIONS

Phillip Rowell and Associates

2018 Background Baseline Levels-of-Service

Table 7 summarizes the results of the level-of-service analysis of the signalized intersections for 2018 background without project generated traffic. Shown in the table are the volume-to-capacity ratios, average vehicle delays and levels-of-service of the overall intersection and all controlled lane groups.

Table 8 summarizes the results of the level-of-service analysis of the unsignalized intersections along Kaonoulu Street (Kaonoulu Street at Kenolio Road and Kaonoulu Street at Alulike Street) and the intersection of Piilani Highway at Kulanihakoi Street for 2018 background without project traffic conditions. Shown in the table are the average vehicle delays and levels-of-service of the controlled movements. Delays and levels-of-service are not calculated for uncontrolled movements.

Figure 11 illustrates the intersection configurations and right-of-way controls used for the level-of-service analysis of 2018 background conditions without project generated traffic. The roadway improvements that are proposed as part of the related projects are assumed to be in place for the level-of-service analysis since the project's traffic is included in the projections. These improvements include:

1. The intersection of Piilani Highway at Kaiwahine Street has been modified to provide separate left, through and right turn lanes along the eastbound approach, two left turn lanes, one through lane and one right turn only lane along the westbound approach and two separate left turn lanes along the southbound approach of Piilani Highway. *These improvements are recommended as part of the Kihei Residential project.*

2. The intersection of South Kihei Road at Kaonoulu Street has been signalized and the southbound approach has been modified to provide a separate left turn lane. *These improvements are recommended as part of the Maui Lu Resort Redevelopment project.*

3. The intersection of Piilani Highway at Kaonoulu Street has been signalized. This is recommended as part of the Piilani Promenade project. *This improvement is included because Maui Lu Resort is to participate in this improvement.*

4. The intersection of Piilani Highway at Kulanihakoi Road has been signalized, the northbound approach has been modified to provide a right turn only lane, the southbound approach has been modified to provide a left turn lane and the eastbound and westbound approached have been modified to provide an optional left turn or through lane and a right turn only lane. *These improvements are those recommended in the TIAR for the proposed Kihei High School to be located at this location.*

Using the standards discussed in Chapter 2, additional improvements are required at the intersection of Piilani Highway at Ohukai Road. The southbound through movement will have a volume-to-capacity ratio of 1.01 during the morning peak hour. During the afternoon peak hour, the overall intersection will have an level-of-service of E. The eastbound left turn and through lane group will have a volume-to-capacity ratio of 1.09 and the northbound through lane group will have a volume-to-capacity ratio of 1.08.

Table 7 2018 Background Levels-of-Service of Signalized Intersections

Intersection and Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Highway at Ohukai Road	***0.96***	***44.6***	***D***	***0.98***	***68.7***	***E***	***0.83***	***29.2***	***C***
Eastbound Left & Thru	0.78	66.5	E	**1.09**	**158.9**	**F**	0.82	46.0	D
Eastbound Right	0.05	46.7	D	0.06	60.4	E	0.09	25.7	C
Westbound Left & Thru	0.92	82.3	F	0.86	78.7	E	0.64	36.2	D
Westbound Right	0.12	44.5	D	0.12	50.6	D	0.03	28.1	C
Northbound Left	0.27	69.4	E	0.70	86.2	F	0.44	34.5	C
Northbound Thru	0.84	23.2	C	**1.08**	**74.2**	**E**	0.93	31.9	C
Northbound Right	0.03	3.8	A	0.06	6.9	A	0.07	13.7	B
Southbound Left	0.82	80.6	F	0.71	61.7	E	0.61	36.1	D
Southbound Thru	**1.01**	**50.8**	**D**	0.94	55.4	E	0.88	25.3	C
Southbound Right	0.08	6.1	A	0.09	39.9	D	0.08	11.9	B
Piilani Highway at Kaiwahine Street	***0.67***	***31.5***	***C***	***0.75***	***29.4***	***C***	***0.73***	***13.4***	***B***
Eastbound Left	0.65	55.0	D	0.62	71.1	E	0.33	22.0	C
Eastbound Thru	0.13	43.5	D	0.29	60.8	E	0.21	20.7	C
Eastbound Right	0.07	43.0	D	0.05	58.5	E	0.04	19.8	B
Westbound Left	0.59	49.4	D	0.67	69.1	E	0.57	23.9	C
Westbound Thru	0.22	44.5	D	0.37	61.7	E	0.29	21.3	C
Westbound Right	0.29	45.4	D	0.10	58.9	E	0.09	20.1	C
Northbound Left	0.25	32.9	C	0.52	90.6	F	0.41	26.9	C
Northbound Thru	0.67	30.0	C	0.75	21.7	C	0.73	11.9	B
Northbound Right	0.07	52.3	D	0.16	10.1	A	0.10	6.7	A
Southbound Left	0.47	46.8	D	0.71	64.1	E	0.71	28.3	C
Southbound Thru	0.60	20.6	C	0.62	18.5	B	0.72	9.4	A
Southbound Right	0.01	10.2	B	0.05	9.6	A	0.03	4.6	A
Piilani Highway at North Kihei Road	***0.66***	***29.4***	***C***	***0.84***	***35.3***	***C***	***0.69***	***20.1***	***C***
Eastbound Left	0.57	64.0	E	0.79	55.0	D	0.47	30.3	C
Eastbound Left & Thru	0.59	65.1	E	0.82	58.4	E	0.47	30.3	C
Eastbound Right	0.26	36.4	D	0.26	23.5	C	0.21	15.6	B
Westbound Left, Thru & Right	0.22	59.0	E	0.81	108.9	F	0.02	32.8	C
Northbound Left	0.66	39.0	D	0.84	60.7	E	0.60	27.9	C
Northbound Thru & Right	0.59	19.5	B	0.58	19.9	B	0.56	9.2	A
Southbound Left	0.27	66.6	E	0.46	78.4	E	0.35	38.6	D
Southbound Thru	0.75	28.8	C	0.83	34.8	C	0.91	28.2	C
Southbound Right	0.10	17.3	B	0.17	19.4	B	0.11	12.3	B
North Kihei Road at South Kihei Road	***0.42***	***19.7***	***B***	***0.60***	***22.7***	***C***	***0.63***	***10.2***	***B***
Eastbound Thru	0.30	10.8	B	0.55	28.9	C	0.46	10.1	B
Eastbound Right	0.19	9.8	A	0.40	25.4	C	0.29	8.9	A
Westbound Left	0.59	63.0	E	0.56	30.3	C	0.64	24.3	C
Westbound Thru	0.20	1.5	A	0.18	2.4	A	0.16	3.3	A
Northbound Left	0.76	53.5	D	0.34	44.7	D	0.56	18.4	B
Northbound Right	0.13	0.0	A	0.12	0.0	A	0.10	0.0	A
Piilani Highway at Kaonoulu Street	***0.85***	***17.8***	***B***	***0.79***	***14.5***	***B***	***0.70***	***6.5***	***A***
Eastbound Left	0.39	53.6	D	0.57	72.1	E	0.45	29.2	C
Eastbound Right	0.60	59.5	E	0.13	64.7	E	0.61	33.4	C
Northbound Left	0.68	54.0	D	0.73	73.2	E	0.67	11.7	B
Northbound Thru	0.42	8.1	A	0.62	6.1	A	0.48	3.5	A
Southbound Thru	0.77	14.8	B	0.70	10.4	B	0.53	3.8	A
Southbound Right	0.07	14.8	B	0.09	7.4	A	0.10	2.4	A

Table 7 (Continued)

South Kihei Road at Kaonoulu Street	***0.47***	***6.2***	***A***	***0.53***	***9.3***	***A***	***0.48***	***6.4***	***A***
Westbound Left	0.42	22.2	C	0.44	26.5	C	0.45	21.3	C
Westbound Right	0.03	19.8	B	0.03	23.9	C	0.02	18.7	B
Northbound Thru	0.48	4.5	A	0.55	8.2	A	0.49	4.8	A
Northbound Right	0.07	3.0	A	0.13	5.6	A	0.10	3.3	A
Southbound Left	0.08	3.0	A	0.62	39.2	D	0.12	3.4	A
Southbound Thru	0.33	3.8	A	0.43	3.6	A	0.41	4.4	A
Piilani Highway at Kulanihakoi Road	***0.80***	***16.7***	***B***	***0.74***	***11.5***	***B***	***0.59***	***6.6***	***A***
Eastbound Left & Thru	0.35	53.4	D	0.49	71.5	E	0.30	29.1	C
Eastbound Right	0.25	52.4	D	0.06	65.7	E	0.06	27.4	C
Westbound Left & Thru	0.66	65.0	E	0.51	71.9	E	0.00	0.0	A
Westbound Right	0.02	50.4	D	0.01	65.2	E	0.00	0.0	A
Northbound Left	0.50	64.6	E	0.59	72.1	E	0.75	77.5	E
Northbound Thru	0.57	8.0	A	0.72	6.9	A	0.55	3.4	A
Northbound Right	0.09	4.6	A	0.02	2.2	A	0.00	0.0	A
Southbound Left	0.60	64.7	E	0.34	58.1	E	0.00	0.0	A
Southbound Thru	0.83	16.0	B	0.70	7.7	A	0.59	6.2	A
Southbound Right	0.03	6.5	A	0.06	7.1	A	0.05	3.6	A
Piilani Highway at Piikea Avenue	***0.85***	***24.1***	***C***	***0.82***	***30.5***	***C***	***0.65***	***24.2***	***C***
Eastbound Left	0.88	73.1	E	0.89	83.3	F	0.82	57.0	E
Eastbound Right	0.22	44.6	D	0.17	52.4	D	0.17	38.1	D
Northbound left	0.72	74.9	E	0.87	85.3	F	0.77	59.1	E
Northbound Thru	0.49	7.9	A	0.67	11.5	B	0.40	7.4	A
Southbound Thru	0.85	24.6	C	0.78	31.1	C	0.54	21.2	C
Southbound Right	0.34	13.0	B	0.39	21.7	C	0.24	17.3	B

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix C for Level-of-Service Analysis Worksheets.

Table 8 2018 Levels-of-Service of Unsignalized Intersections

	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
Intersection and Movement	Delay [1]	LOS [2]	Delay	LOS	Delay	LOS
Kaonoulu Street at Kenolio Road	***6.6***	***A***	***5.0***	***A***	***7.0***	***A***
Eastbound Left	7.7	A	7.8	A	8.3	A
Westbound Left	7.5	A	7.7	A	7.8	A
Northbound Left	11.8	B	13.8	B	21.3	C
Northbound Thru & Right	9.6	A	10.5	B	12.3	B
Southbound Left	11.7	B	18.1	C	37.4	E
Southbound Thru & Right	9.8	A	11.4	B	12.9	B
Kaonoulu Street at Alulike Street	***2.0***	***A***	***2.5***	***A***	***3.2***	***A***
Eastbound Left	7.5	A	7.8	A	7.8	A
Westbound Left	7.3	A	7.7	A	7.7	A
Northbound Left, Thru & Right	11.5	B	12.6	B	13.5	B
Southbound Left, Thru & Right	9.3	A	9.9	A	10.7	B

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix C for Level-of-Service Analysis Worksheets.

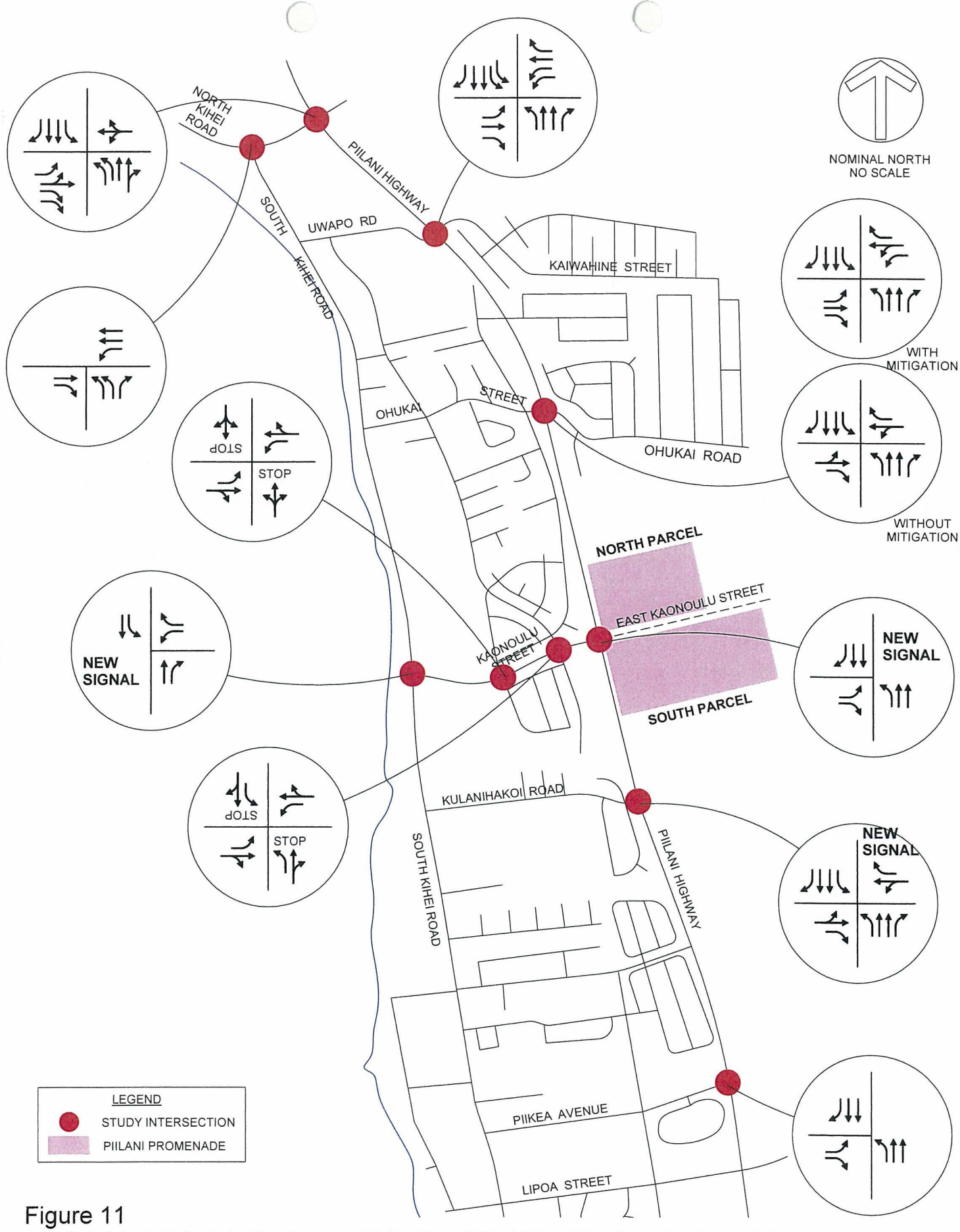


Figure 11
2018 BASELINE LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

Phillip Rowell and Associates

Mitigation Required for 2018 Baseline Conditions

The conclusion of the level-of-service of 2018 baseline conditions is that roadway improvements are required at the intersection of Piilani Highway at Ohukai Road to accommodate traffic associated with the related projects. The eastbound approach should be modified to provide one separate left turn lane, one through lane and one right turn lane. The westbound approach should be modified to provide one left turn lane, one left turn or thru lane and one right turn lane.

These improvements are required to mitigate the impacts of background growth and traffic generated by the related projects. The level-of-service resulting from the following improvements are summarized in Table 9.

Table 9 Mitigation Analysis - Piilani Highway at Ohukai Road

Intersection and Movement	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Mitigation			With Mitigation			Without Mitigation			With Mitigation			Without Mitigation			With Mitigation		
	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Ohukai Rd	***0.96***	***44.6***	***D***	***0.83***	***31.6***	***C***	***0.98***	***68.7***	***E***	***0.90***	***38.2***	***D***	***0.83***	***29.2***	***C***	***0.75***	***20.8***	***C***
Eastbound Left				0.44	51.4	D				0.79	89.8	F				0.74	40.4	D
Eastbound Left & Thru	0.78	66.5	E				**1.09**	**158.9**	**F**				0.82	46.0	D			
Eastbound Thru				0.39	50.8	D				0.49	67.4	E				0.17	27.8	C
Eastbound Right	0.05	46.7	D	0.05	47.6	D	0.06	60.4	E	0.06	62.4	E	0.09	25.7	C	0.09	27.3	c
Westbound Left				0.60	55.9	E				0.78	84.3	F				0.67	48.4	D
Westbound Left & Thru	0.92	82.3	F	0.63	56.9	E	0.86	78.7	E	0.81	87.2	F	0.64	36.2	D	0.58	41.0	d
Westbound Right	0.12	44.5	D	0.12	48.3	D	0.12	50.6	D	0.28	62.4	E	0.03	28.1	C	0.03	32.6	C
Northbound Left	0.27	69.4	E	0.27	69.6	E	0.70	86.2	F	0.78	101.6	F	0.44	34.5	C	0.45	35.4	D
Northbound Thru	0.84	23.2	C	0.76	16.6	B	**1.08**	**74.2**	**E**	0.87	20.9	C	0.93	31.9	C	0.77	18.9	B
Northbound Right	0.03	3.8	A	0.03	3.2	A	0.06	6.9	A	0.05	2.0	A	0.07	13.7	B	0.07	10.7	b
Southbound Left	0.82	80.6	F	0.82	82.2	F	0.71	61.7	E	0.84	73.3	E	0.61	36.1	D	0.62	37.0	D
Southbound Thru	**1.01**	**50.8**	**D**	0.93	30.5	C	0.94	55.4	E	0.78	33.4	C	0.88	25.3	C	0.75	16.2	B
Southbound Right	0.08	6.1	A	0.07	5.0	A	0.09	39.9	D	0.07	33.6	C	0.08	11.9	B	0.08	9.1	A

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

4. PROJECT-RELATED TRAFFIC CONDITIONS

This chapter discusses the methodology used to identify the traffic-related impacts of the proposed project. This chapter presents the trip generation, distribution and assignment of project generated traffic and the background plus project traffic projections. The results of the level-of-service analysis of background plus project conditions is presented in the following chapter.

Methodology

Future traffic volumes generated by the project were estimated using the procedures described in the *Trip Generation Handbook*[10] and data provided in *Trip Generation*[11]. This method used trip generation rates or equations to estimate the number of trips that the project will generate during the peak hours of the project and along the adjacent street.

Trip Generation of Proposed Development

The assumptions used for the trip generation analysis are:

1. Trip generation equations for shopping centers were used to estimate the number of peak hour trips generated by the retail areas of the project. These rates are based on the

[10] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

[11] Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 2003

leasable floor area. The trip generation equations for shopping centers are summarized in Table 10.

Table 10 Trip Generation Formulas for Retail Uses

	Weekday AM Peak Hour	Weekday PM Peal Hour	Saturday Peak Hour
Total	Ln (T) = 0.59Ln(A)+2.32	Ln (T) = 0.67Ln(A)+3.37	Ln (T) = 0.65Ln(A)+3.76
Inbound	61%	49%	52%
Outbound	39%	51%	48%

Notes: (1) Source: Institute of Transportation Engineers, *Trip Generation, 8th Edition*
(2) T = Trips, A = 1,000 gross leasable square feet
(3) Formulas shown are for the peak hour of the adjacent street.

2. The percentage of pass by trips generated by the retail uses was estimated using the data provided in the *Trip Generation Handbook*.[12] The equations for estimating the number of pass by trips are summarized in Table 11. The equations are also based on the gross leasable floor area.

Table 11 Formulas For Pass By Trips

	Weekday AM Peak Hour	Weekday PM Peal Hour	Saturday Peak Hour
Total	No Formula Provided	Ln (T) = - 0.29 Ln(A)+5.00	T = -0.02 + 38.59
Inbound		50%	50%
Outbound		50%	50%

Notes: (1) Source: Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., June 2004, p 47 and 50
(2) T = Percent Pass By Trips, A = 1,000 gross leasable square feet
(3) Formulas shown are for the peak hour of the adjacent street.

3. Trip generation rates for outdoor nurseries were used to estimate the number of peak hour trips generated by the outdoor garden area. These rates are based on the gross square feet of floor area. The trip generation equations for outdoor garden uses are summarized in Table 12. *Trip Generation* did not provide directional distribution data (% inbound and % outbound). Therefore, it was assumed that the directional distribution would be 50% inbound and 50% outbound.

Table 12 Trip Generation Rates for Outdoor Garden Uses

	Weekday AM Peak Hour	Weekday PM Peal Hour	Saturday Peak Hour
Total	1.31	3.80	11.00
Inbound	50%	50%	50%
Outbound	50%	50%	50%

Notes: (1) Source: Institute of Transportation Engineers, *Trip Generation, 8th Edition*
(2) T = Trips, A = 1,000 gross square feet
(3) Formulas shown are for the peak hour of the adjacent street.

[12] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., June 2004

4. Trip generation rates for general light industrial uses were used to estimate the number of peak hour trips generated by the light industrial portion of the project. These equations are based on the number of acres developed. The trip generation equations for general light industrial uses are summarized in Table 13.

Table 13 Trip Generation Formulas for Light Industrial Uses

	Weekday AM Peak Hour	Weekday PM Peal Hour	Saturday Peak Hour
Total	T=7.51(A)	T=3.68(A)+116.82	T=0.96(A)
Inbound	83%	22%	47%
Outbound	17%	78%	53%

Notes: (1) Source: Institute of Transportation Engineers, *Trip Generation, 8th Edition*
(2) T = Trips, A = Number of acres
(3) Formulas shown are for the peak hour of the adjacent street.

5. Trip generation rates for apartments are based on the number of dwelling units. The trip generation equations for apartments are summarized in Table 14.

Table 14 Trip Generation Formulas for Apartments

	Weekday AM Peak Hour	Weekday PM Peal Hour	Saturday Peak Hour
Total	T=0.49(X)+3.73	T=0.55(X)+17.65	T=0.41(X)+19.23
Inbound	20%	65%	50%
Outbound	80%	35%	50%

Notes: (1) Source: Institute of Transportation Engineers, *Trip Generation, 8th Edition*
(2) T = Trips, X = 1,000 number of dwelling units
(3) Formulas shown are for the peak hour of the adjacent street.

The results of the trip generation calculations are summarized in Table 15. The trips shown are the peak hourly trips generated by the project during the peak hours of the adjacent street. As shown, the project will generate 613 new trips during the morning peak hour, 1,830 new trips during the afternoon peak hour and 2,278 new trips during the Saturday peak hour.

Table 15 Summary of Trip Generation Analysis

Time Period	Direction	North Parcel					South Parcel				Total Project		
		Retail (100,000 SF)			Light Industrial (5 Acres)	Apartment (226 Units)	Retail (358,091 SF)			Outdoor Garden Total Trips (28,000 SF)			
		Total Trips	Pass By Trips	Net New Trips			Total Trips	Pass By Trips	Net New Trips		Total Trips	Pass By Trips	Net New Trips
AM Peak Hour	Total	145	15	130	38	114	327	33	294	37	661	48	613
	In	88	8	80	32	23	199	17	182	19	361	25	336
	Out	57	7	50	6	91	128	16	112	18	300	23	277
PM Peak Hour	Total	593	238	355	135	142	1496	404	1092	106	2472	642	1830
	In	291	119	172	30	92	733	202	531	53	1199	321	878
	Out	302	119	183	105	50	763	202	561	53	1273	321	952
Saturday Peak Hour	Total	800	294	506	5	112	1964	617	1347	308	3189	911	2278
	In	416	147	269	2	56	1021	309	712	154	1649	456	1193
	Out	384	147	237	3	56	943	308	635	154	1540	455	1085

Trip Distribution and Assignments

The project-related trips were distributed along the anticipated approach routes to the project site based on following assumptions:

1. The purpose of the project is to provide services for the residents and tourist of South Maui. Thus marketing and advertising will be directed toward this area. Accordingly, it was assumed that 75% of the traffic to and from the project will be generated by Kihei and South Maui.

2. 25% of the project generate traffic will approach and depart via Mokulele Highway (10%) and North Kihei Road (15%). Of the 15% from North Kihei Road, 10% will use North Kihei Road to Piilani Highway at then Piilani Highway to the project. The remaining 5% will use South Kihei Road and Kaonoulu Street.

3. The traffic generated from within Kihei (75%) was distributed based on the distribution of residential units and hotel rooms (including timeshares and vacation rentals) using the data presented in the *Maui Long-Range Land Transportation Plan* with adjustments to reflect Maui Lu Resort Redevelopment, the Kihei Residential Development, Honuaula and additional Wailea Resort units. Using this distribution, 20% of the trips would be generated by the area north of Kaonoulu Street and 80% would be generated by the area south of Kaonoulu Street.

Trips were assigned based on the following assumptions:

1. Kaonoulu Street is extended mauka of Piilani Highway to provide access to the project and the intersection of Piilani Highway at Kaonoulu Street is signalized.

2. There will be four (4) driveways along East Kaonoulu Street to serve the project. Drive A is the major access and egress driveway. This driveway is located approximately 600 feet east of Piilani Highway. This will be a full access, signalized intersection.

3. Drive B is located approximately midway between Piilani Highway and Drive A. Drive B provides for right turns only into and out of the north parcel and the south parcel. This intersection is unsignalized.

4. Drive C is located approximately 500 feet east of Drive A. This driveway provides service to the south parcel and future affordable housing units to be located along the north side of East Kaonoulu Street and east of the North Parcel. All movements will be allowed and the intersection will be unsignalized.

5. Drive D is located approximately 300 feet east of Drive C near the eastern property line of the project. This driveway is behind the last building and will most likely be used be service and employee vehicles. Anticipated use of this driveway is minimal.

The lane configurations and right-of-way controls of the study intersections used for the 2018 traffic assignments are shown on Figure 12. The project morning peak hour, afternoon peak hour and Saturday peak hour trip assignments are shown in Figures 13, 14 and 15, respectively.

2018 Background Plus Project Projections

Background plus project traffic conditions are defined as 2018 background traffic conditions plus project related traffic. The incremental difference between background and background plus project is the traffic impact of the project under study.

2018 background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2018 background peak hour traffic volumes presented in Chapter 3. The 2018 background plus project traffic projections at the study intersections are shown on Figures 16, 17 and 18. The 2018 background plus project traffic projections along East Kaonoulu Street and at the project driveways are shown on Figure 19.

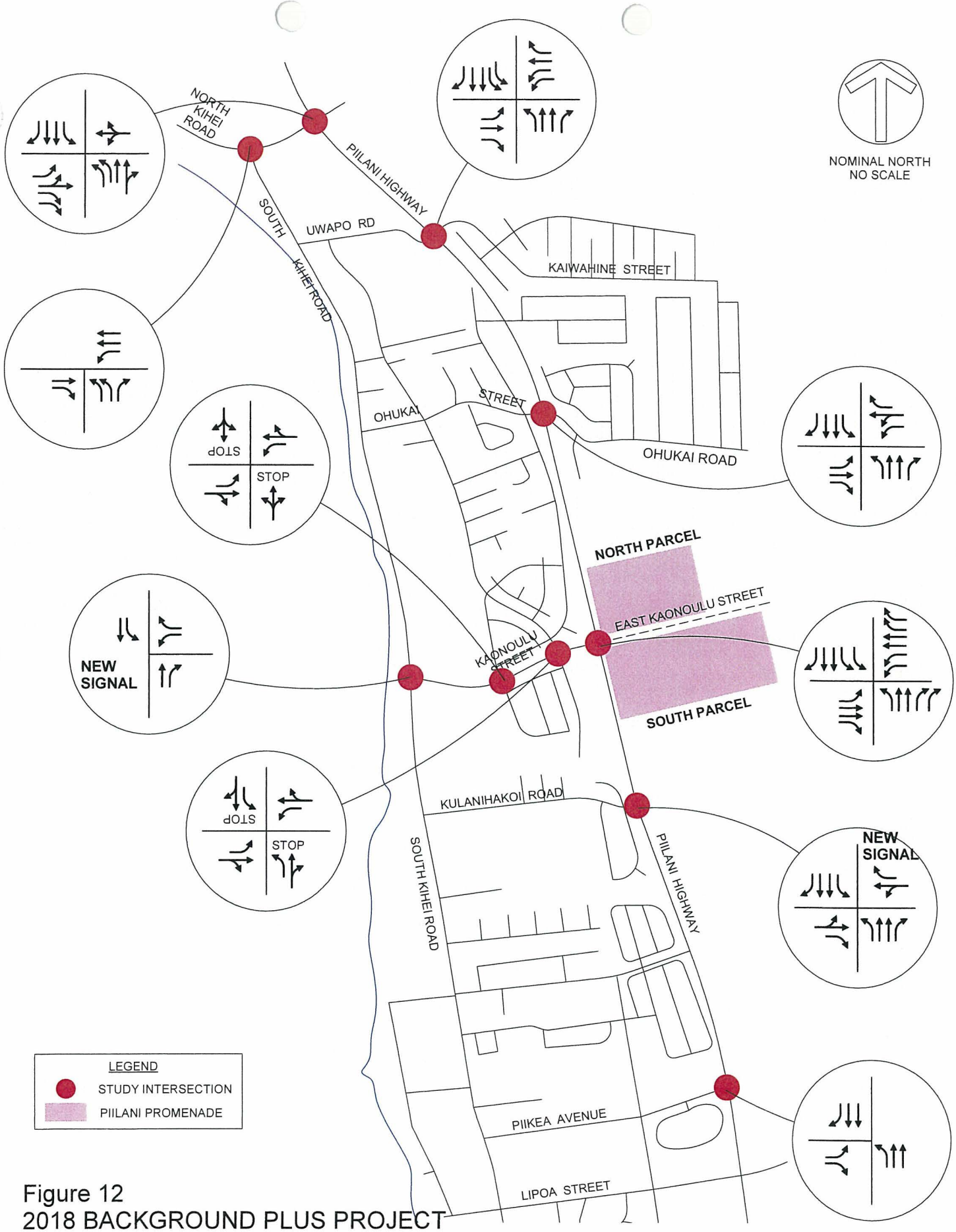


Figure 12
2018 BACKGROUND PLUS PROJECT
LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

Phillip Rowell and Associates

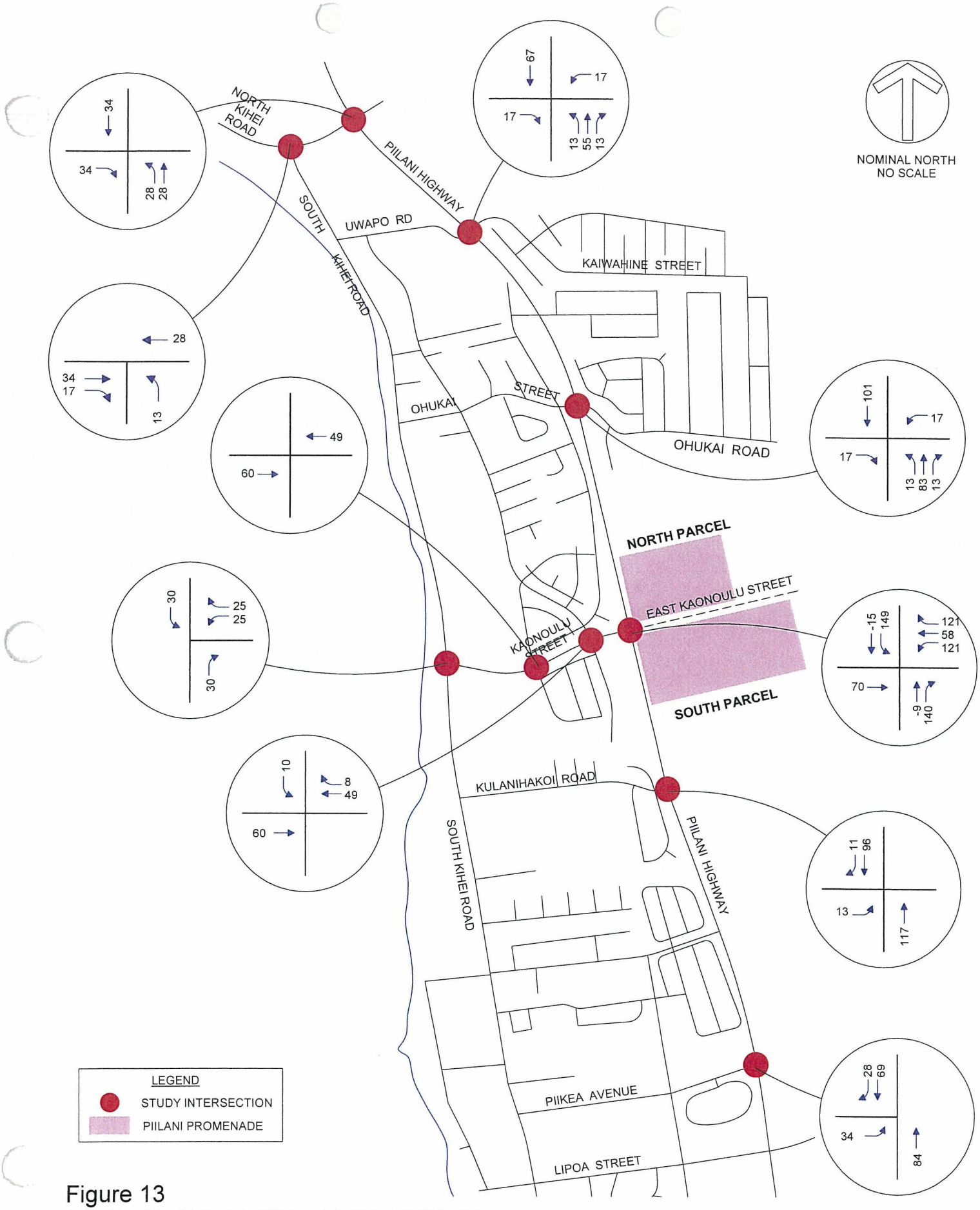


Figure 13
AM PEAK HOUR TRIP ASSIGNMENTS

Phillip Rowell and Associates

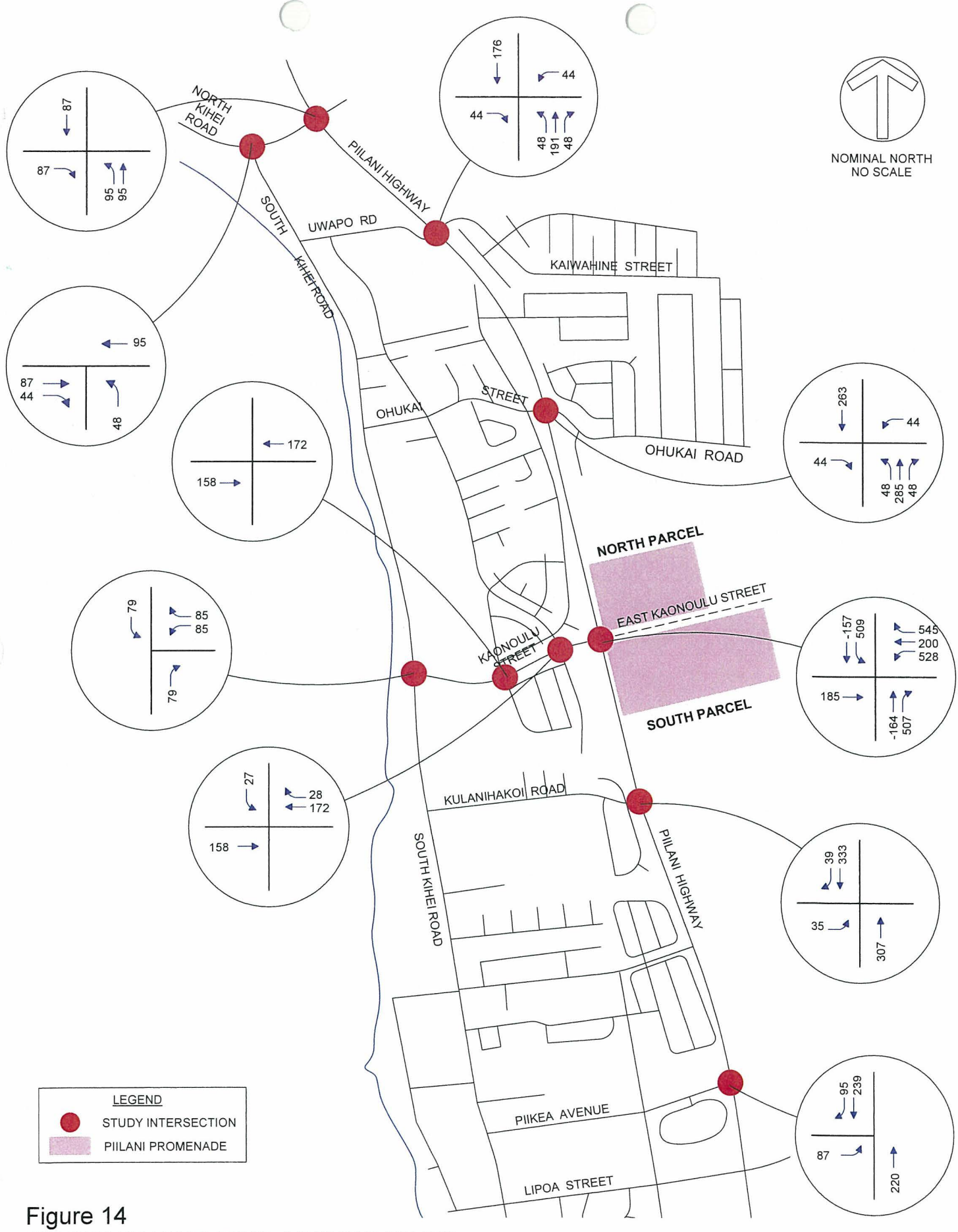


Figure 14
PM PEAK HOUR TRIP ASSIGNMENTS

Phillip Rowell and Associates

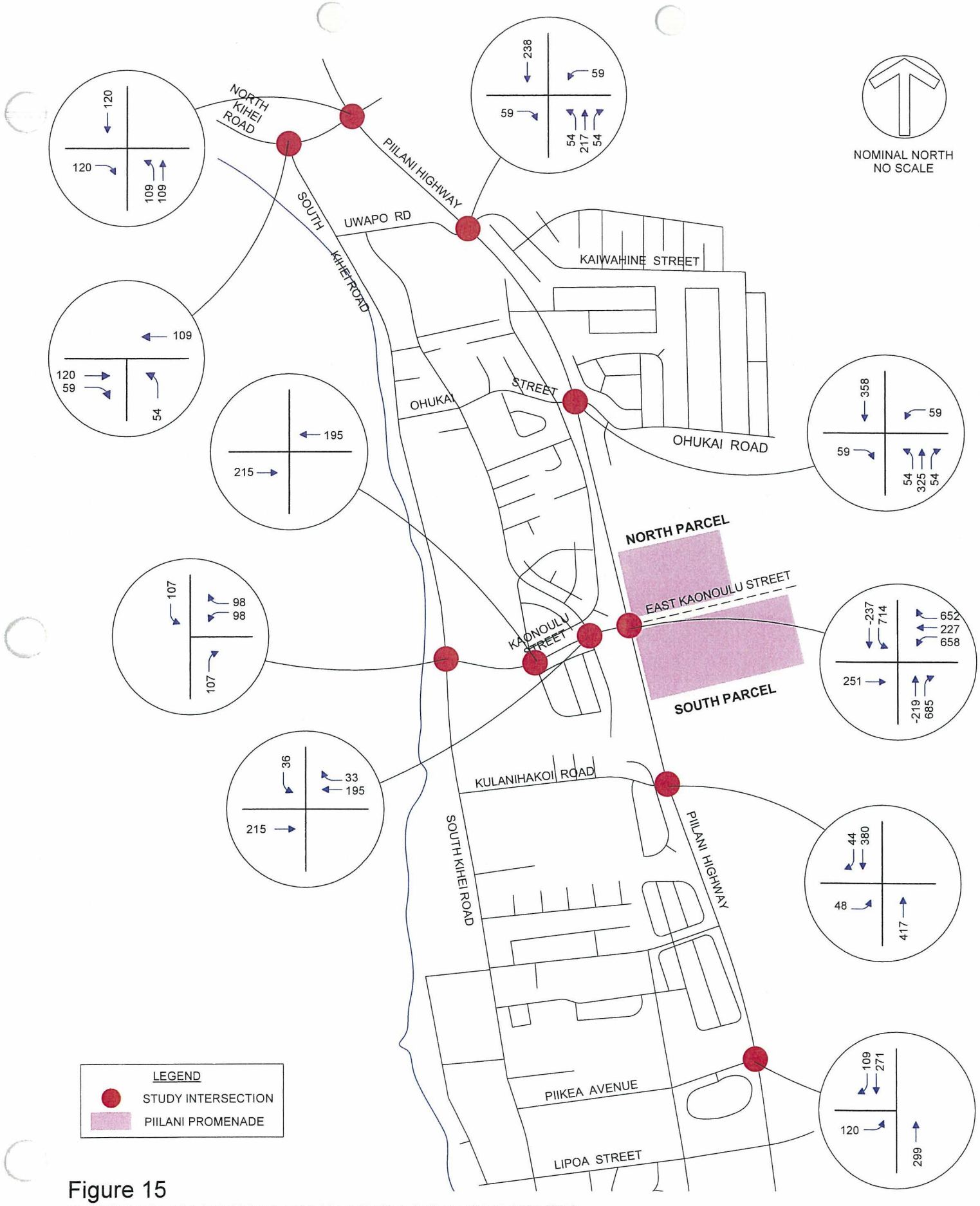


Figure 15
SATURDAY PEAK HOUR TRIP ASSIGNMENTS

Phillip Rowell and Associates

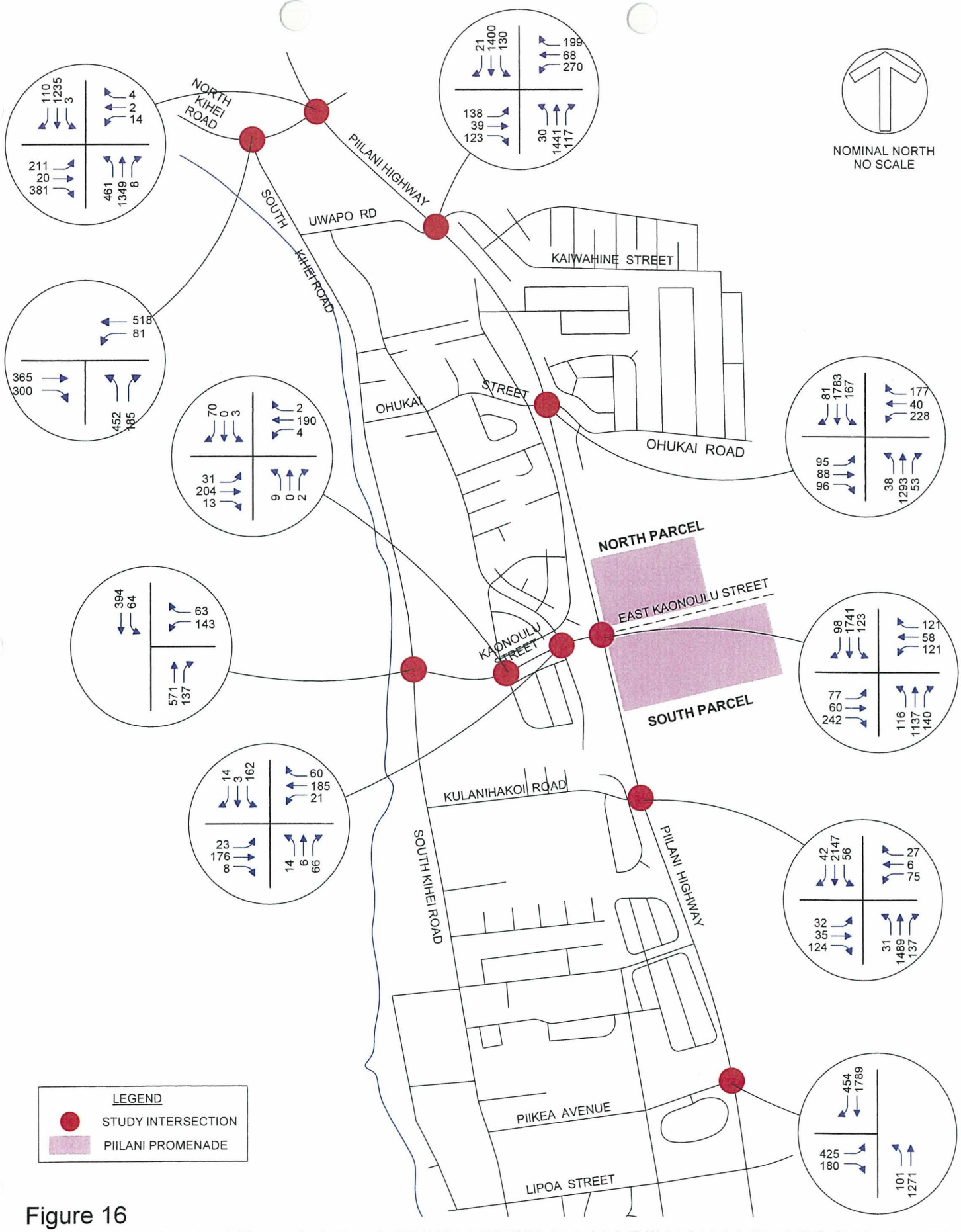


Figure 16
2018 BACKGROUND PLUS PROJECT WEEKDAY AM PEAK HOUR PROJECTIONS

Phillip Rowell and Associates

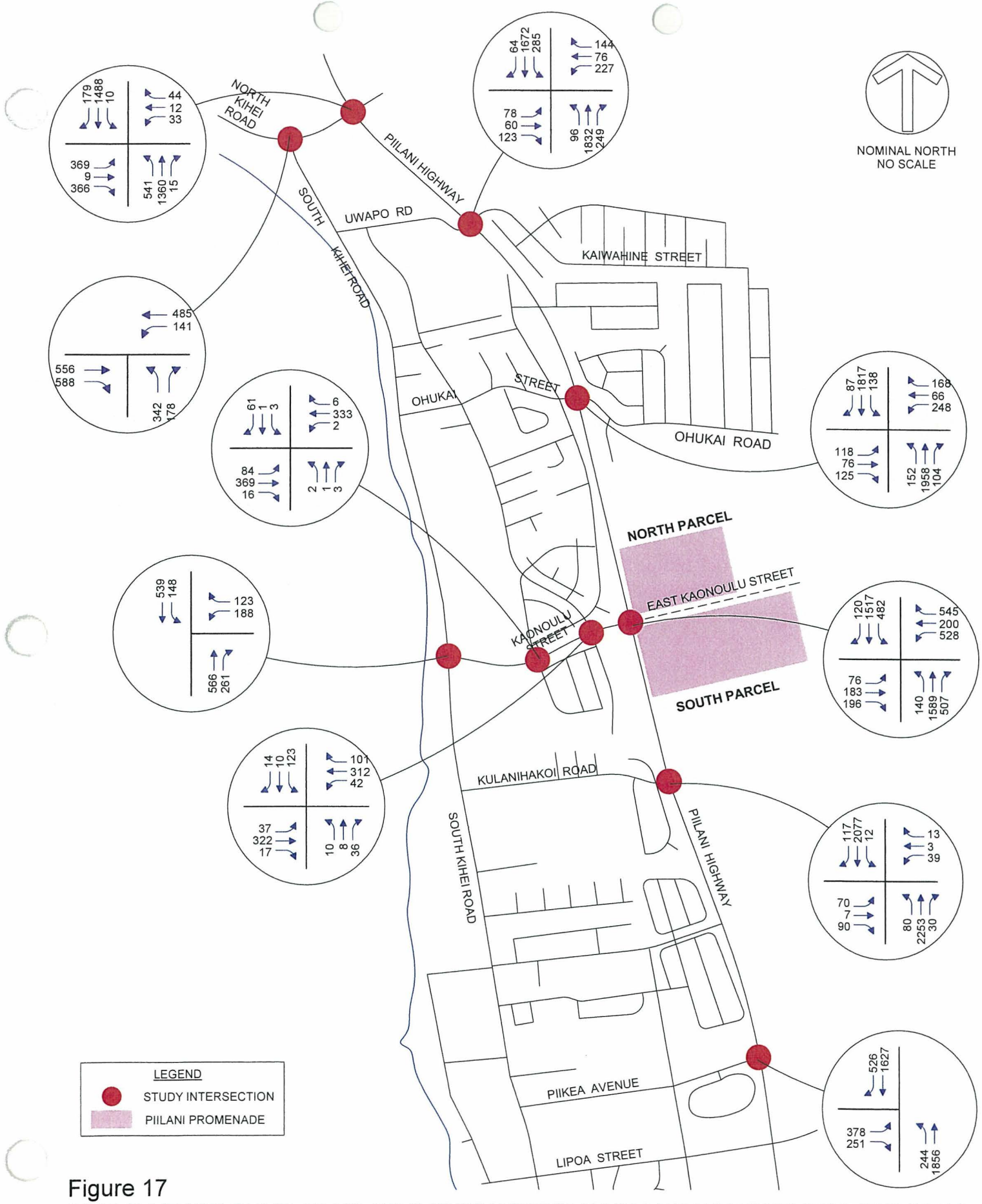


Figure 17
2018 BACKGROUND PLUS PROJECT WEEKDAY PM PEAK HOUR PROJECTIONS

Phillip Rowell and Associates

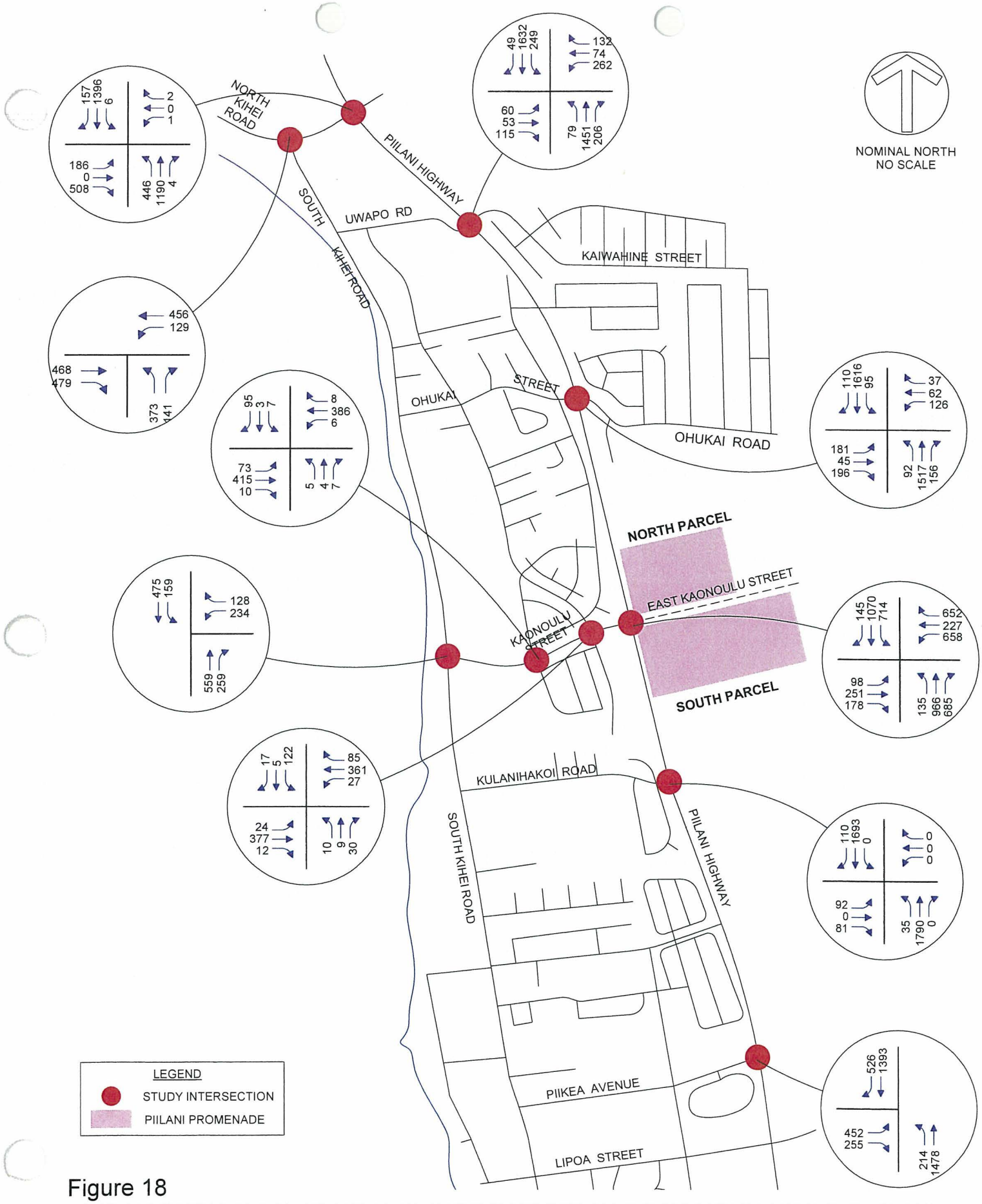
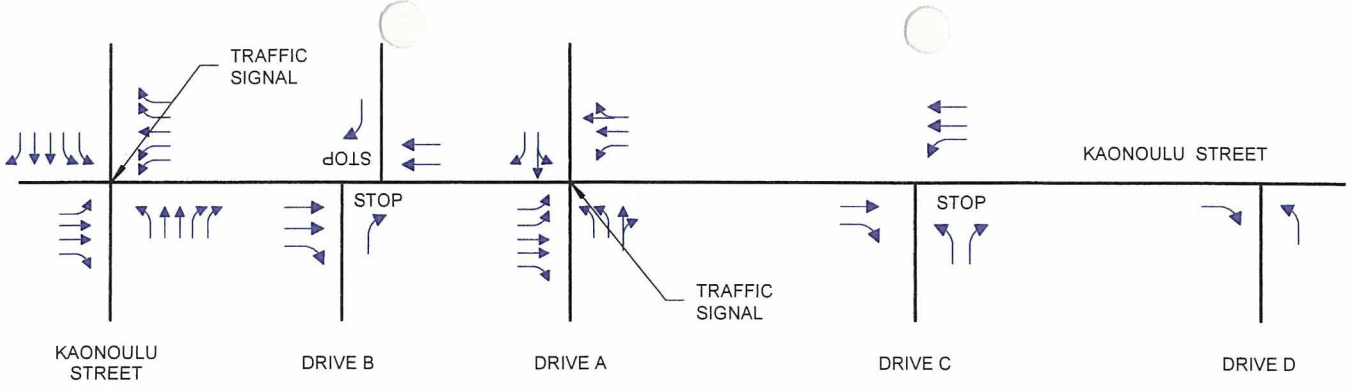
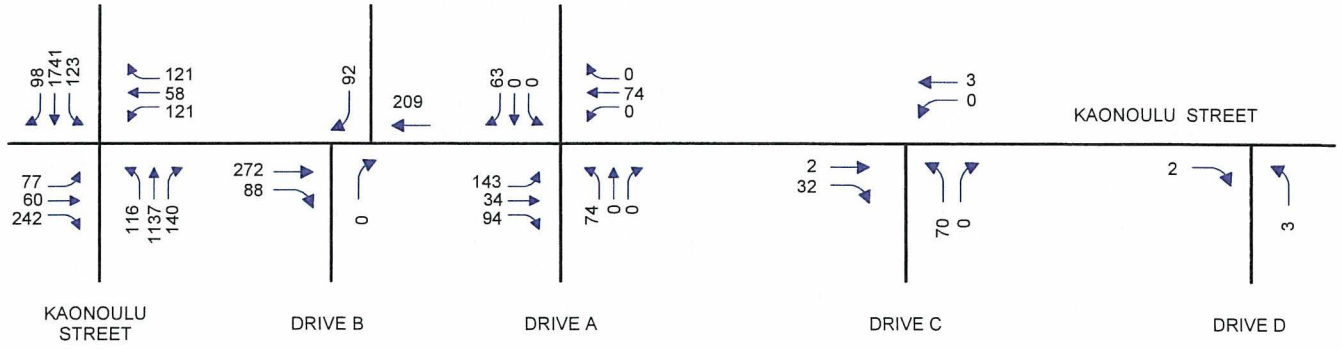


Figure 18
2018 BACKGROUND PLUS PROJECT SATURDAY PEAK HOUR PROJECTIONS

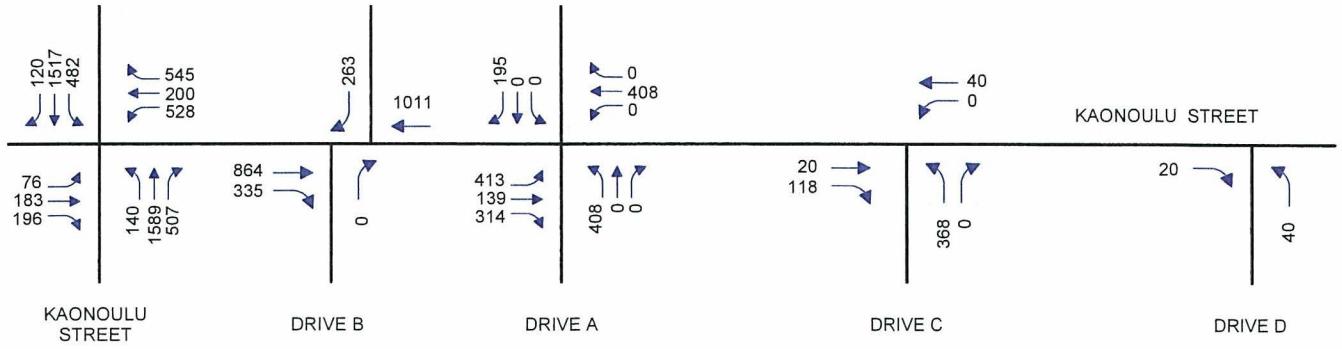
Phillip Rowell and Associates



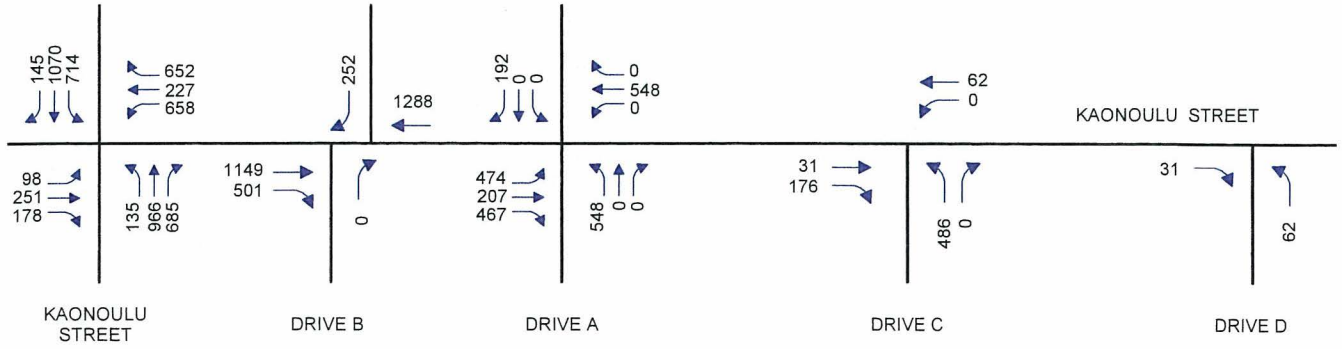
RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR



SATURDAY PEAK HOUR

Figure 19
2018 TRAFFIC PROJECTIONS AT PROJECT DRIVEWAYS

Phillip Rowell and Associates

5. TRAFFIC IMPACT ANALYSIS

The traffic impacts of the project was assessed by analyzing the changes in traffic volumes and levels-of-service at the study intersections. These impacts are discussed in this chapter. Intersections with overall levels-of-service or traffic movements that do not meet the standard for acceptable levels-of-service are identified and improvements that will provide acceptable levels-of-service are identified and assessed. This chapter also describes anticipated traffic operating conditions at the project's driveways along East Kaonoulu Street.

Changes in Total Intersection Volumes

An analysis of the project's share of 2018 background plus project intersection approach volumes at the study intersections is summarized in Table 15. The table summarizes the project's share of total 2018 peak hour approach volumes at each intersection. Also shown are the percentage of 2018 background plus project traffic that is the result of background growth and traffic generated by related projects.

The project's traffic impacts are concentrated at the intersection of Piilani Highway at Kaonoulu Street where project generated traffic represents almost a third of the afternoon peak hour traffic and almost half of the Saturday peak hour traffic. Also, it should be noted that project generated traffic represents a larger percentage of Saturday peak hour traffic than weekday peak hour traffic because the project generates more traffic during the Saturday peak hour and background traffic is less during the Saturday peak hour than weekday peak hours.

Table 15 Analysis of Project's Share of Total Intersection Approach Volumes [1]

Intersection	Period	Existing	2018 Background	2018 Background Plus Project	Background Growth		Project Traffic	
					Trips	Percent of Total Traffic [2]	Trips	Percent of Total Traffic [3]
Piilani Hwy at Ohukai Road	AM	3321	3895	4139	574	13.9%	244	5.9%
	PM	3688	4325	5057	637	12.6%	732	14.5%
	SAT	2622	3324	4233	702	16.6%	909	21.5%
Piilani Hwy at Uwapo Rd & Kaiwahine St	AM	2939	3794	3976	855	21.5%	182	4.6%
	PM	3337	4355	4906	1018	20.8%	551	11.2%
	SAT	2619	3681	4362	1062	24.3%	681	15.6%
Piilani Hwy at N. Kihei Rd & Mokulele Hwy	AM	3081	3674	3798	593	15.6%	124	3.3%
	PM	3402	4062	4426	660	14.9%	364	8.2%
	SAT	2738	3438	3896	700	18.0%	458	11.8%
S. Kihei Rd at N. Kihei Rd	AM	1498	1809	1901	311	16.4%	92	4.8%
	PM	1730	2016	2290	286	12.5%	274	12.0%
	SAT	1329	1704	2046	375	18.3%	342	16.7%
Piilani Hwy at Kaonoulu St	AM	2941	3399	4034	458	11.4%	635	15.7%
	PM	3288	3930	6083	642	10.6%	2153	35.4%
	SAT	2296	3048	5779	752	13.0%	2731	47.3%
S. Kihei Rd at Kaonoulu St	AM	1017	1262	1372	245	17.9%	110	8.0%
	PM	1242	1497	1825	255	14.0%	328	18.0%
	SAT	1122	1404	1814	282	15.5%	410	22.6%
Piilani Hwy at Kulanihakoi St	AM	3363	3964	4201	601	14.3%	237	5.6%
	PM	3488	4077	4791	589	12.3%	714	14.9%
	SAT	2323	2912	3801	589	15.5%	889	23.4%
Kaonoulu Street at Kenolio Drive	AM	366	611	738	245	33.2%	127	17.2%
	PM	364	647	1032	283	27.4%	385	37.3%
	SAT	273	600	1079	327	30.3%	479	44.4%
Kaonoulu Street at Alulike Drive	AM	200	419	526	219	41.6%	107	20.3%
	PM	272	551	881	279	31.7%	330	37.5%
	SAT	246	609	1019	363	35.6%	410	40.2%
Piilani Highway at Piikea Avenue	AM	3385	3906	4121	521	12.6%	215	5.2%
	PM	3679	4241	4882	562	11.5%	641	13.1%
	SAT	2930	3519	4318	589	13.6%	799	18.5%

Notes:
(1) Volumes shown are total intersection approach volumes or projections.
(2) Percentage of total 2018 background plus project traffic.

2018 Background Plus Project Level-of-Service Analysis

The level-of-service analysis was performed for background and background plus project conditions. The incremental difference between the two conditions quantifies the impact of the project. The assumptions used for the level-of-service analysis are:

1. The intersection of South Kihei Road at Kaonoulu Street is signalized.

2. The intersection of Piilani Highway at Kaonoulu Street is improved as follows as part of the proposed project:

    a. The intersection is signalized. Northbound and southbound left turns are protected.

    b. Two southbound to eastbound left turn lane are added.

    c. Two northbound to eastbound right turn and deceleration lanes are added.

    d. Two eastbound through lanes are added.

    e. A westbound approach with two left turn lanes, one through lane and two right turn lanes is added.

3. The traffic signal cycle lengths of the traffic signals along Piilani Highway are increased from 150 seconds to 180 seconds for the afternoon peak hour. The morning peak hour traffic signal cycle lengths are 125 seconds. This cycle length was used.

4. The mitigation measures to accommodate 2018 background traffic as described in the previous chapter are have been implemented. The eastbound approach has been modified to provide one separate left turn lane, one through lane and one right turn lane. The westbound approach has been modified to provide one left turn lane, one thru or left turn lane and one right turn lane.

The results of the Level-of-Service analysis of the signalized intersections are summarized in Table 16 and the results of the Level-of-Service analysis of the unsignalized intersections are summarized in Table 17.

Table 16 2018 Background Plus Project Levels-of-Service - Signalized Intersections

	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Project			With Project			Without Project			With Project			Without Project			With Project		
Intersection and Movement	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Ohukai Rd	***0.83***	***31.6***	***C***	***0.91***	***44.1***	***D***	***0.90***	***38.2***	***D***	***0.98***	***46.4***	***D***	***0.75***	***20.8***	***C***	***0.84***	***37.0***	***D***
Eastbound Left	0.44	51.0	D	0.52	54.8	D	0.79	89.8	F	0.86	119.6	F	0.74	40.4	D	0.80	76.4	E
Eastbound Thru	0.39	50.8	D	0.46	53.5	D	0.49	67.4	E	0.54	83.1	F	0.17	27.8	C	0.19	55.0	D
Eastbound Right	0.05	47.6	D	0.07	49.8	D	0.06	62.4	E	0.09	76.5	E	0.09	27.3	C	0.38	57.3	E
Westbound Left	0.60	68.3	E	**0.97**	**101.7**	**F**	0.78	84.3	F	0.90	117.3	F	0.67	48.4	D	0.75	77.9	E
Westbound Left & Thru	0.63	45.6	D	0.16	47.2	D	0.81	87.2	F	0.92	122.7	F	0.58	41.0	D	0.35	61.0	E
Westbound Right	0.12	45.4	D	0.12	46.8	D	0.28	62.4	E	0.28	74.4	E	0.03	32.6	C	0.03	57.9	E
Northbound Left	0.27	69.4	E	0.32	55.6	E	0.78	101.6	F	0.85	98.9	F	0.45	35.4	D	0.73	79.9	E
Northbound Thru	0.76	16.5	B	0.73	31.0	C	0.87	20.9	C	0.96	23.4	C	0.77	18.9	B	0.83	29.1	C
Northbound Right	0.03	3.6	A	0.04	16.6	B	0.05	2.0	A	0.09	7.7	A	0.07	10.7	B	0.13	15.0	B
Southbound Left	0.82	80.8	F	0.82	79.9	E	0.84	73.3	E	0.91	98.9	F	0.62	37.0	D	0.70	74.9	E
Southbound Thru	0.93	37.4	D	**1.01**	**43.5**	**D**	0.78	33.4	C	0.92	42.1	D	0.75	16.2	C	0.87	31.4	C
Southbound Right	0.07	5.5	A	0.07	6.3	A	0.07	33.6	C	0.08	28.9	C	0.08	9.1	A	0.10	14.2	B
Piilani Hwy at Kaiwahine St	***0.67***	***31.5***	***C***	***0.71***	***30.8***	***C***	***0.75***	***29.4***	***C***	***0.81***	***45.1***	***D***	***0.73***	***13.4***	***B***	***0.81***	***19.7***	***B***
Eastbound Left	0.65	55.0	D	0.65	54.4	D	0.62	71.1	E	0.59	80.1	F	0.33	22.0	C	0.32	20.8	C
Eastbound Thru	0.13	43.5	D	0.13	43.3	D	0.29	60.8	E	0.27	71.2	E	0.21	20.7	C	0.20	19.7	B
Eastbound Right	0.07	43.0	D	0.08	42.9	D	0.05	58.5	E	0.08	69.1	E	0.04	19.8	B	0.08	19.0	B
Westbound Left	0.59	49.4	D	0.62	50.1	D	0.67	69.1	E	0.80	89.5	F	0.57	23.9	C	0.71	27.2	C
Westbound Thru	0.22	44.5	D	0.22	44.3	D	0.37	61.7	E	0.34	72.2	E	0.29	21.3	C	0.28	20.2	C
Westbound Right	0.29	45.4	D	0.30	45.4	D	0.10	58.9	E	0.10	69.2	E	0.09	20.1	C	0.09	19.1	B
Northbound Left	0.25	32.9	C	0.33	36.1	D	0.52	90.6	F	0.68	79.5	E	0.41	26.9	C	0.63	30.1	C
Northbound Thru	0.67	30.0	C	0.63	26.0	C	0.75	21.7	C	0.82	38.9	D	0.73	11.9	B	0.89	18.2	B
Northbound Right	0.07	52.3	D	0.08	43.4	D	0.16	10.1	B	0.20	24.9	C	0.10	6.7	A	0.14	7.2	A
Southbound Left	0.47	46.8	D	0.47	48.1	D	0.71	64.1	E	0.76	70.7	E	0.71	28.3	C	0.68	26.0	C
Southbound Thru	0.60	20.6	C	0.64	23.0	C	0.62	18.5	B	0.72	35.7	D	0.72	9.4	A	0.93	20.2	C
Southbound Right	0.01	10.2	B	0.01	12.3	B	0.05	9.6	A	0.05	20.4	C	0.03	4.6	A	0.03	5.7	A

Table 16 2018 Background Plus Projects Levels-of-Service - Signalized Intersections (Continued)

	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Project			With Project			Without Project			With Project			Without Project			With Project		
Intersection and Movement	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at N. Kihei Rd	***0.66***	***29.4***	***C***	***0.68***	***30.2***	***C***	***0.84***	***35.3***	***D***	***0.89***	***44.2***	***D***	***069***	***20.1***	***C***	***0.77***	***21.6***	***C***
Eastbound Left	0.57	64.0	E	0.57	61.9	E	0.79	55.0	E	0.83	75.5	E	0.47	30.3	C	0.55	38.8	D
Eastbound Left & Thru	0.59	65.1	E	0.59	62.9	E	0.82	58.4	E	0.86	80.5	F	0.47	30.3	C	0.55	38.8	D
Eastbound Right	0.26	36.4	D	0.29	36.1	D	0.26	23.5	C	0.33	46.6	D	0.21	15.6	B	0.40	20.8	C
Westbound Left, Thru & Right	0.22	59.0	E	0.22	59.0	E	0.81	108.9	F	0.70	100.9	F	0.02	32.8	C	0.02	39.2	D
Northbound Left	0.66	39.0	D	0.67	44.5	D	0.84	60.7	E	0.92	78.3	E	0.60	27.9	C	0.74	35.8	D
Northbound Thru & Right	0.59	19.5	B	0.60	18.2	B	0.58	19.9	B	0.61	18.0	B	0.56	9.2	A	0.56	8.2	A
Southbound Left	0.27	66.6	E	0.27	66.6	E	0.46	78.4	E	0.55	105.8	F	0.35	38.6	D	0.41	46.9	D
Southbound Thru	0.75	28.8	C	0.79	30.9	C	0.83	34.8	C	0.89	45.5	D	0.91	28.2	C	0.90	27.5	C
Southbound Right	0.10	17.3	B	0.10	17.9	B	0.17	19.4	B	0.18	23.7	C	0.11	12.3	B	0.12	12.3	B
N. Kihei Rd at S. Kihei Rd	***0.42***	***19.7***	***B***	***0.45***	***19.6***	***B***	***0.60***	***22.7***	***C***	***0.66***	***32.1***	***C***	***0.63***	***10.2***	***B***	***0.69***	***11.1***	***B***
Eastbound Thru	0.30	10.8	B	0.34	11.5	B	0.55	28.9	C	0.57	26.5	C	0.46	10.1	B	0.58	11.2	B
Eastbound Right	0.19	9.8	A	0.21	10.2	B	0.40	25.4	C	0.49	24.7	C	0.29	8.9	A	0.33	8.8	A
Westbound Left	0.59	63.0	E	0.59	65.9	E	0.56	30.3	C	0.65	86.8	F	0.64	24.3	C	0.68	27.9	C
Westbound Thru	0.20	1.5	A	0.21	1.5	A	0.18	2.4	A	0.20	1.7	A	0.16	3.3	A	0.21	3.3	A
Northbound Left	0.76	53.5	D	0.76	53.0	D	0.34	44.7	D	0.48	62.4	E	0.56	18.4	B	0.68	21.9	C
Northbound Right	0.13	0.0	A	0.13	0.0	A	0.12	0.0	A	0.12	56.0	E	0.10	0.0	A	0.10	0.0	A
Piilani Hwy at Kaonoulu St	***0.85***	***17.8***	***B***	***0.79***	***31.6***	***C***	***0.79***	***14.5***	***B***	***0.90***	***52.5***	***D***	***0.70***	***6.5***	***A***	***0.97***	***53.6***	***D***
Eastbound Left	0.39	53.6	D	0.60	74.6	E	0.57	72.1	E	0.63	90.6	F	0.45	29.2	C	0.74	83.2	F
Eastbound Thru				0.24	66.8	E				0.69	87.5	F				0.83	80.6	F
Eastbound Right	0.60	59.5	E	0.72	64.8	E	0.13	64.7	E	0.60	70.9	E	0.61	33.4	C	0.12	61.1	E
Westbound Left				0.51	69.5	E				0.97	98.2	F				0.96	78.9	F
Westbound Thru				0.46	70.5	E				0.65	79.1	E				0.58	52.0	D
Westbound Right				0.05	66.0	E				0.50	50.6	D				0.26	46.4	D
Northbound Left	0.68	54.0	D	0.62	70.0	F	0.73	73.2	E	0.83	105.8	F	0.67	11.7	B	0.73	75.4	E
Northbound Thru	0.42	8.1	A	0.52	13.6	B	0.62	6.1	A	0.94	54.4	D	0.48	3.5	A	0.87	52.3	D
Northbound Right				0.05	5.2	A				0.27	11.8	B				0.41	37.2	D
Southbound Left				0.54	70.7	E				0.90	104.9	F				0.95	73.8	E
Southbound Thru	0.77	14.8	B	0.85	27.2	C	0.70	10.4	B	0.80	19.0	B	0.53	3.8	A	0.71	32.4	C
Southbound Right	0.07	14.8	B	0.08	11.3	B	0.09	7.4	A	0.11	7.4	A	0.10	2.4	A	0.13	22.2	C
S. Kihei Rd at Kaonoulu St.	***0.47***	***6.2***	***A***	***0.49***	***6.7***	***A***	***0.53***	***9.3***	***A***	***0.69***	***14.1***	***B***	***0.48***	***6.4***	***A***	***0.58***	***8.0***	***A***
Westbound Left	0.42	22.2	C	0.46	20.3	C	0.44	26.5	C	0.64	25.4	C	0.45	21.3	C	0.55	14.8	B
Westbound Right	0.03	19.8	B	0.04	17.8	B	0.03	23.9	C	0.08	19.0	B	0.02	18.7	B	0.09	11.9	B
Northbound Thru	0.48	4.5	A	0.50	5.0	A	0.55	8.2	A	0.67	12.5	B	0.49	4.8	A	0.59	7.3	A
Northbound Thru	0.07	3.0	A	0.09	3.3	A	0.13	5.6	A	0.18	7.9	A	0.10	3.3	A	0.18	4.9	A
Southbound Left	0.08	3.0	A	0.16	3.6	A	0.62	39.2	D	0.82	47.3	D	0.12	3.4	A	0.52	7.4	A
Southbound Thru	0.33	3.8	A	0.35	4.2	A	0.43	3.6	A	0.47	4.5	A	0.41	4.4	A	0.50	6.4	A

Table 16 2018 Background Plus Projects Levels-of-Service - Signalized Intersections (Continued)

	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Project			With Project			Without Project			With Project			Without Project			With Project		
Intersection and Movement	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Kulanihakoi St	***0.80***	***16.7***	***B***	***0.83***	***16.2***	***B***	***0.74***	***11.5***	***B***	***0.82***	***14.2***	***B***	***0.59***	***6.6***	***A***	***0.73***	***8.9***	***A***
Eastbound Left & Thru	0.35	53.4	D	0.49	55.3	E	0.49	71.5	E	0.73	101.1	F	0.30	29.1	C	0.58	40.2	D
Eastbound Right	0.25	52.4	D	0.26	52.4	D	0.06	65.7	E	0.06	75.5	E	0.06	27.4	C	0.06	33.1	C
Westbound Left & Thru	0.66	65.0	E	0.70	70.1	E	0.51	71.9	E	0.54	85.7	F	0.00	0.0	A	0.00	0.0	A
Westbound Right	0.02	50.4	D	0.02	50.2	D	0.01	65.2	E	0.01	75.0	E	0.00	0.0	A	0.00	0.0	A
Northbound Left	0.50	64.6	E	0.50	64.6	E	0.59	72.1	E	0.67	83.7	F	0.75	77.5	E	0.70	74.9	E
Northbound Thru	0.57	8.0	A	0.62	8.8	A	0.72	6.9	A	0.83	6.6	A	0.55	3.4	A	0.70	5.2	A
Northbound Right	0.09	4.6	A	0.09	4.6	A	0.02	2.2	A	0.02	2.6	A	0.00	0.0	A	0.00	0.0	A
Southbound Left	0.60	64.8	E	0.60	66.6	E	0.34	58.1	E	0.76	154.1	F	0.00	0.0	A	0.00	0.0	A
Southbound Thru	0.83	16.0	B	0.87	14.5	B	0.70	7.7	A	0.83	11.6	B	0.59	6.2	A	0.74	8.8	A
Southbound Right	0.02	6.5	A	0.03	3.7	A	0.06	7.1	A	0.09	6.7	A	0.05	3.6	A	0.08	3.9	A
Piilani Hwy at Piikea Ave	***0.85***	***24.1***	***C***	***0.90***	***32.9***	***D***	***0.82***	***30.5***	***C***	***0.94***	***36.4***	***D***	***0.65***	***24.2***	***C***	***0.93***	***35.5***	***D***
Eastbound Left	0.88	73.1	E	0.87	63.6	E	0.89	83.3	F	0.96	99.7	F	0.82	57.0	E	0.92	64.9	E
Eastbound Right	0.22	44.6	D	0.29	40.1	D	0.17	52.4	D	0.33	56.5	E	0.17	38.1	D	0.19	32.1	C
Northbound Left	0.72	74.9	E	0.71	70.1	E	0.87	85.3	F	0.95	115.0	F	0.77	59.1	E	0.93	91.8	F
Northbound Thru	0.49	7.9	A	0.55	9.8	A	0.67	11.5	B	0.80	20.0	B	0.40	7.4	A	0.72	16.8	B
Southbound Thru	0.85	24.6	C	0.94	23.8	C	0.78	31.1	C	0.94	34.0	C	0.54	21.2	C	0.93	42.1	D
Southbound Right	0.34	13.0	B	0.37	9.5	B	0.39	21.7	C	0.52	10.3	B	0.24	17.3	B	0.46	24.4	C

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix D for Level-of-Service Analysis Worksheets without Project.
(4) See Appendix E for Level-of-Service Analysis Worksheets with Project.

Table 17 2015 Background Plus Project Levels-of-Service - Unsignalized Intersections

	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
	Without Project		With Project		Without Project		With Project		Without Project		With Project	
Intersection and Movement	Delay [1]	LOS [2]	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Kaonoulu St at Kenolio Rd	***6.6***	***A***	***7.2***	***A***	***5.0***	***A***	***9.3***	***A***	***7.0***	***A***	***9.4***	***A***
Eastbound Left	7.7	A	7.8	A	7.8	A	8.5	A	8.3	A	8.6	A
Westbound Left	7.5	A	7.7	A	7.7	A	8.1	A	7.8	A	8.2	A
Northbound Left	11.8	B	13.3	B	13.8	B	22.7	C	21.3	C	23.9	C
Northbound Thru & Right	9.6	A	10.1	B	10.5	B	13.2	B	12.3	B	14.4	B
Southbound Left	17.7	C	23.8	C	18.1	C	63.2	F	37.4	E	70.8	F
Southbound Thru & Right	9.8	A	10.3	B	11.4	B	15.7	C	12.9	B	13.9	B
Kaonoulu St at Alulike St	***2.0***	***A***	***2.2***	***A***	***2.5***	***A***	***1.8***	***A***	***3.2***	***A***	***2.4***	***A***
Eastbound Left	7.5	A	7.7	A	7.8	A	8.3	A	7.8	A	8.5	A
Westbound Left	7.6	A	7.7	A	7.7	A	8.2	A	7.7	A	8.3	A
Northbound Left, Thru & Right	11.5	B	13.9	B	12.6	B	17.5	C	13.5	B	21.9	C
Southbound Left, Thru & Right	9.3	A	10.0	A	9.9	A	11.8	B	10.7	B	14.0	B

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix C for Level-of-Service Analysis Worksheets for Without Project conditions.
(4) See Appendix D for Level-of-Service Analysis Worksheets for With Project conditions.

Project Driveways

The results of the Level-of-Service analysis of the project driveways are summarized in Table 18.

Table 18 2018 Levels-of-Service of Project Driveways

	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	With Project			With Project			With Project		
Intersection and Movement	V/C[1]	Delay[2]	LOS[3]	V/C	Delay	LOS	V/C	Delay	LOS
E. Kaonoulu Street at Drive A	***0.13***	***7.6***	***A***	***0.63***	***45.5***	***D***	***0.76***	***35.0***	***C***
Eastbound Left	0.15	8.0	A	0.72	47.4	D	0.94	54.9	D
Eastbound Thru	0.03	7.3	A	0.11	19.5	B	0.15	13.6	B
Eastbound Right	0.06	7.6	A	**0.22**	**87.3**	**F**	0.32	14.9	B
Westbound Left	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
Westbound Thru & Right	0.06	7.4	A	0.71	38.8	D	0.82	35.7	D
Northbound Left	0.07	7.5	A	0.68	36.6	D	0.91	46.3	D
Northbound Thru & Right	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
Southbound Left	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
Southbound Thru & Right	0.04	7.5	A	0.13	25.3	C	0.13	23.6	C
E. Kaonoulu St at Drive B South	***nc***	***0.0***	***A***	***nc***	***0.0***	***A***	***nc***	***0.0***	***A***
Northbound Right	nc	0.0	A	nc	0.0	A	nc	0.0	A
E. Kaonoulu St at Drive B North	***nc***	***1.5***	***A***	***nc***	***2.2***	***A***	***nc***	***2.1***	***A***
Southbound Right	nc	9.4	A	nc	18.0	C	nc	22.5	C
E. Kaonoulu Street at Drive C	***nc***	***5.8***	***A***	***nc***	***7.7***	***A***	***nc***	***8.9***	***A***
Northbound Left	nc	8.8	A	nc	11.4	B	nc	13.8	B
E. Kaonoulu Street at Drive D	***nc***	***5.1***	***A***	***nc***	***5.8***	***A***	***nc***	***5.8***	***A***
Northbound Left & Right	nc	8.5	A	nc	8.7	A	nc	8.8	A

NOTES:
(1) Denotes volume-to-capacity ratio. Volume-to-capacity ratios are not calculated for the unsignalized intersections.
(2) Delay is in seconds per vehicle.
(3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(4) See Appendix D for Level-of-Service Analysis Worksheets.
(5) nc = not calculated.

Mitigation Measures

The findings of the level-of-service analysis are that mitigation is required at the following intersections:

1. Piilani Highway at Ohukai Road
2. Piilani Highway at Kaiwahine Street
3. Piilani Highway at Kaonoulu Street

Table 19 is a summary of the recommended mitigation. Table 20 indicates the levels-of-service without and with the recommended mitigation.

Table 19 Summary of Recommended Mitigation Measures Conditions

Location	Mitigation Required to Mitigate 2015 Background Conditions	Improvements Recommended As Part of Piilani Promenade Project	Additional Mitigation Required to Mitigate 2015 Background Plus Project
Overall			1. Provide set backs along East Kaonoulu Street at all project driveways for future right turn decelerations lanes . 2. Construct Mauka Road connection between Ohukai Road and East Kaonoulu Street.
Piilani Highway at Ohukai Street	1. Modify the westbound approach to provide a one left turn lane, one optional left or thru lane and one right turn lane. 2. Modify the eastbound approach to provide one left turn lane, one thru lane and one right turn lane.		No additional mitigation required
Piilani Highway at Kaiwahine St and Uwapo Road	1. Modify the eastbound approach to provide separate left, through and right turn lanes 2. Modify the westbound approach to provide two left turn lanes, one through lane and one right turn lane. 3. Modify the southbound approach to provide a second left turn lane.		No additional mitigation required
Piilani Highway at Kaonoulu Street	1. Install traffic signals	1. Modify eastbound approach to provide one left turn lane, one through lane and one right turn lane 2. Provide two southbound to eastbound left turn lanes 3. Provide two left turn lanes, one through lane and one right turn lanes along the westbound approach	No additional mitigation required
South Kihei Road at Kaonoulu Street	1. Install traffic signals 2. Provide southbound to eastbound left turn lane and northbound to eastbound right turn lane.		No additional mitigation required
Piilani Highway at Kulanihakoi Road	1. Install traffic signals 2. Provide southbound to eastbound left turn lane and northbound to eastbound right turn deceleration lane.		No additional mitigation required

Table 20 2018 Background Plus Project Mitigation Analysis

	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Mitigation			With Mitigation			Without Mitigation			With Mitigation			Without Mitigation			With Mitigation		
Intersection and Movement	V/C	Delay [1]	LOS [2]	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Ohukai Rd	***0.91***	***44.1***	***D***	***0.89***	***41.7***	***D***	***0.98***	***46.4***	***D***	***0.96***	***42.3***	***D***	***0.84***	***37.0***	***D***	***0.76***	***31.3***	***C***
Eastbound Left	0.52	54.8	D	0.52	54.8	D	0.86	119.6	F	0.86	119.6	F	0.80	76.4	E	0.76	66.6	E
Eastbound Thru	0.46	53.5	D	0.46	53.6	D	0.54	83.1	F	0.54	83.1	F	0.19	55.0	D	0.18	50.0	D
Eastbound Right	0.07	49.8	D	0.07	49.9	D	0.09	76.5	E	0.09	76.5	E	0.38	57.3	E	0.23	50.6	D
Westbound Left	0.97	101.7	F	0.91	85.1	F	0.90	117.3	F	0.81	101.7	F	0.75	77.9	E	0.56	64.9	E
Westbound Left & Thru	0.16	47.2	D	0.16	47.2	D	0.92	122.7	F	0.82	103.9	f	0.35	61.0	E	0.49	61.8	E
Westbound Right	0.12	46.8	D	0.12	46.9	D	0.28	74.4	E	0.29	75.2	E	0.03	57.9	E	0.03	57.2	E
Northbound Left	0.32	55.6	E	0.32	55.6	E	0.85	98.9	F	0.85	97.2	F	0.73	79.9	E	0.85	102.1	F
Northbound Thru	0.73	31.0	C	0.80	30.5	C	0.96	23.4	C	0.93	18.9	B	0.83	29.1	C	0.76	22.4	C
Northbound Right	0.04	16.6	B	0.03	16.5	B	0.09	7.7	A	0.05	7.4	A	0.13	15.0	B	0.08	11.9	B
Southbound Left	0.82	79.9	E	0.82	79.8	E	0.91	98.9	F	0.91	99.9	F	0.70	74.9	E	0.83	95.1	F
Southbound Thru	**1.01**	**43.5**	**D**	**1.00**	**40.5**	**D**	0.92	42.1	D	0.89	38.4	D	0.87	31.4	C	0.81	23.8	C
Southbound Right	0.07	6.3	A	0.07	6.2	A	0.08	28.9	C	0.08	28.8	C	0.10	14.2	B	0.09	11.8	B
Piilani Hwy at Kaiwahine St	***0.71***	***30.8***	***C***	***0.71***	***30.4***	***C***	***0.81***	***45.1***	***D***	***0.81***	***42.7***	***D***	***0.81***	***19.7***	***B***	***0.78***	***19.5***	***B***
Eastbound Left	0.65	54.4	D	0.65	55.0	D	0.59	80.1	F	0.68	90.5	F	0.32	20.8	C	0.32	20.8	C
Eastbound Thru	0.13	43.3	D	0.13	43.5	D	0.27	71.2	E	0.30	73.6	E	0.20	19.7	B	0.20	19.7	B
Eastbound Right	0.08	42.9	D	0.08	43.1	D	0.08	69.1	E	0.08	71.2	E	0.08	19.0	B	0.08	19.0	B
Westbound Left	0.62	50.1	D	0.59	49.4	D	0.80	89.5	F	0.73	86.1	F	0.71	27.2	C	0.56	22.4	C
Westbound Thru	0.22	44.3	D	0.22	44.5	D	0.34	72.2	E	0.38	74.7	E	0.28	20.2	C	0.28	20.2	C
Westbound Right	0.30	45.4	D	0.31	45.5	D	0.10	69.2	E	0.10	71.4	E	0.09	19.1	B	0.09	19.1	B
Northbound Left	0.33	36.1	D	0.33	36.3	D	0.68	79.5	E	0.68	81.9	F	0.63	30.1	C	0.63	30.1	C
Northbound Thru	0.63	26.0	C	0.69	25.7	C	0.82	38.9	D	0.81	35.2	D	0.89	18.2	B	0.89	18.2	B
Northbound Right	0.08	43.4	D	0.07	41.0	D	0.20	24.9	C	0.16	20.4	C	0.14	7.2	A	0.10	7.0	A
Southbound Left	0.47	48.1	D	0.47	48.1	D	0.76	70.7	E	0.76	72.4	E	0.68	26.0	C	0.68	26.0	C
Southbound Thru	0.64	23.0	C	0.64	22.8	C	0.72	35.7	D	0.70	33.2	C	0.93	20.2	C	0.93	20.2	C
Southbound Right	0.01	12.3	B	0.01	12.1	B	0.05	20.4	C	0.05	18.1	B	0.03	5.7	A	0.03	5.7	A
Piilani Hwy at Kaonoulu St	***0.79***	***31.6***	***C***	***0.79***	***30.8***	***C***	***0.90***	***52.5***	***D***	***0.87***	***50.6***	***D***	***0.97***	***53.6***	***D***	***0.92***	***50.0***	***D***
Eastbound Left	0.60	74.6	E	0.60	74.6	E	0.63	90.6	F	0.63	90.6	F	0.74	83.2	F	0.72	78.4	E
Eastbound Thru	0.24	66.8	E	0.24	66.8	E	0.69	87.5	F	0.69	87.5	F	0.83	80.6	F	0.81	74.9	E
Eastbound Right	0.72	64.8	E	0.72	64.8	E	0.60	70.9	E	0.60	70.9	E	0.12	61.1	E	0.12	58.1	E
Westbound Left	0.51	69.5	E	0.51	69.5	E	0.97	98.2	F	0.97	98.3	F	0.96	78.9	F	0.94	73.3	E
Westbound Thru	0.46	70.5	E	0.46	70.5	E	0.65	79.1	E	0.65	79.1	E	0.58	52.0	D	0.57	49.0	D
Westbound Right	0.05	66.0	E	0.04	66.0	E	0.50	50.6	D	0.41	49.1	D	0.26	46.4	D	0.04	41.5	D
Northbound Left	0.62	70.0	F	0.62	70.0	E	0.83	105.8	F	0.83	105.8	F	0.73	75.4	E	0.72	70.9	E
Northbound Thru	0.52	13.6	B	0.51	12.8	B	0.94	54.4	D	0.93	52.2	D	0.87	52.3	D	0.85	48.2	D
Northbound Right	0.05	5.2	A	0.05	4.8	A	0.27	11.8	B	0.26	11.3	B	0.41	37.2	D	0.40	34.8	C
Southbound Left	0.54	70.7	E	0.45	70.7	E	0.90	104.9	F	0.76	99.1	F	0.95	73.8	E	0.86	61.7	E
Southbound Thru	0.85	27.2	C	0.85	27.2	C	0.80	19.0	B	0.80	19.0	B	0.71	32.4	C	0.73	32.9	C
Southbound Right	0.08	11.3	B	0.08	11.3	B	0.11	7.4	A	0.11	7.5	A	0.13	22.2	C	0.13	22.3	C

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) See Appendix D for Level-of-Service Analysis Worksheets without Project.
(4) See Appendix E for Level-of-Service Analysis Worksheets with Project.

Impacts of Pedestrians

An assessment of the potential impacts of pedestrians on traffic conditions at the intersection of Piilani Highway at Kaonoulu Street was performed. It is anticipated that there will be pedestrian traffic across Piilani Highway at this intersection. However, there are no pedestrian trip generation data to develop reliable estimates. In order to assess the impacts of pedestrian traffic across Piilani Highway, the level-of-service was rerun assuming that 100 pedestrians per hour would use the crosswalks across Piilani Highway. The addition of 100 pedestrians per hour increased the intersection volume-to-capacity ratios and increased the overall intersection delays slightly but not enough to change the intersection level-of-service.

It has been recommended that traffic conditions at this intersection be assessed at 65% occupancy.

Impacts on Emergency Services

There is no indication within the TIAR that operation of emergency vehicles on the Piilani Highway or the future improved section of the Kihei Upcountry Highway within the proposed Piilani Promenade project will be impaired in any way. All the final levels-of-service are within accepted standards. To the contrary, the traffic signal systems planned for the project will be designed to automatically prioritize emergency vehicle operations, subject to State of Hawaii Department of Transportation's approval of the plans. The roadways and intersections included in the TIAR will operate within acceptable ranges of operation and there is no indication that development of the proposed project or roadway improvements will create a system that impairs the operation of emergency vehicles.

6. LONG-RANGE FORECASTS

During pre-consultation meeting with, State of Hawaii Department of Transportation requested long-range forecasts of the intersections along Piilani Highway that included traffic generated by the south Maui projects (Honuaulu, Wailea Resort and Makena Resort).

Methodology

The *Kihei Master Traffic Plan Study*[13] contained morning and afternoon traffic forecasts for the intersections along Piilani Highway that included traffic associated with Upcountry Highway. The report also implies that the forecast include traffic associated with major South Maui projects known at the time, primarily Wailea, Makena and Honuaulu.

The traffic forecasts in the *Kihei Master Traffic Plan Study* were adjusted to include traffic from the following project:

1. Kaiwahine Village
2. Maui Lu Resort
3. Kenolio 6 Residential
4. Kihei Residential
5. Kihei High School Phases 1 and 2
6. Honuaulu Off-site Affordable Housing

[13] Parsons Brinckerhoff Quade & Douglas, *Kihei Master Traffic Plan Study*, Honolulu, HI, September 2003

7. Maui Research and Technology park

The resulting morning and afternoon 2025 traffic projections are shown on Figures 20 and 21, respectively. The resulting peak hour projections along East Kaonoulu Street are shown on Figure 22. A level-of-service analysis was performed to confirm that the study intersections would operate at acceptable levels-of-service. The level-of-service analysis confirmed that the following improvements should be implemented:

1. The North-South Collector Road should be completed between Kaonoulu Street and Waipuilani Road.

2. The mauka roadway should be completed between Ohukai Street and Lipoa Street. It should be noted that the connection between Lipoa Street and the proposed Kihei High School was recommended in the TIAR for the Maui Research and Technology Park and the connection between Ohukai Road and East Kaonoulu Street is recommended in this report.

3. The intersection of East Kaonoulu Street at Drive C should be signalized. This intersection provides access and egress to the proposed Honuaulu Affordable Housing project.

Figure 20 2025 Background Plus Project Weekday AM Peak Hour Projections

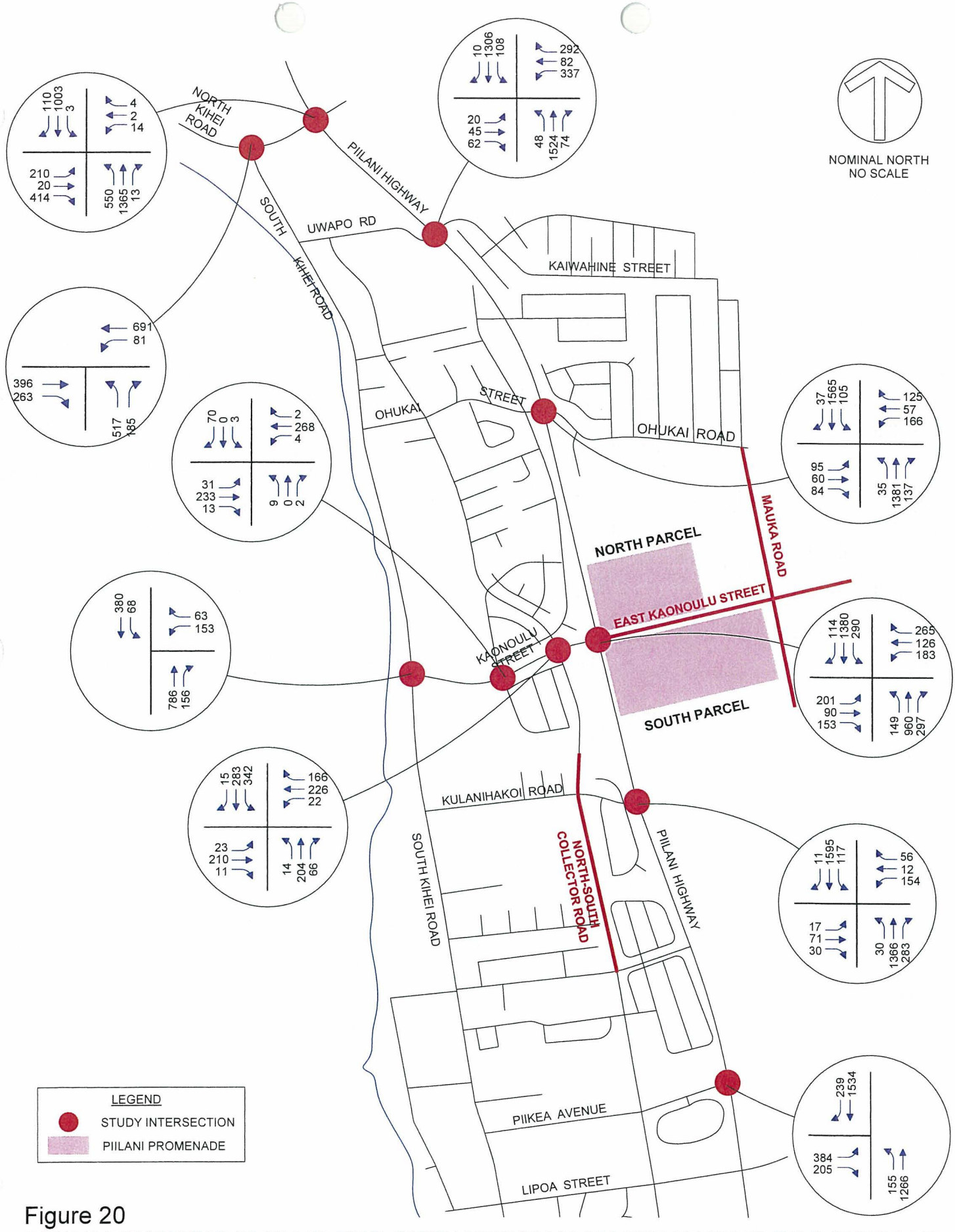


Figure 20
2025 BACKGROUND PLUS PROJECT WEEKDAY AM PEAK HOUR PROJECTIONS

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Figure 21 2025 Background Plus Project Weekday PM Peak Hour Projections

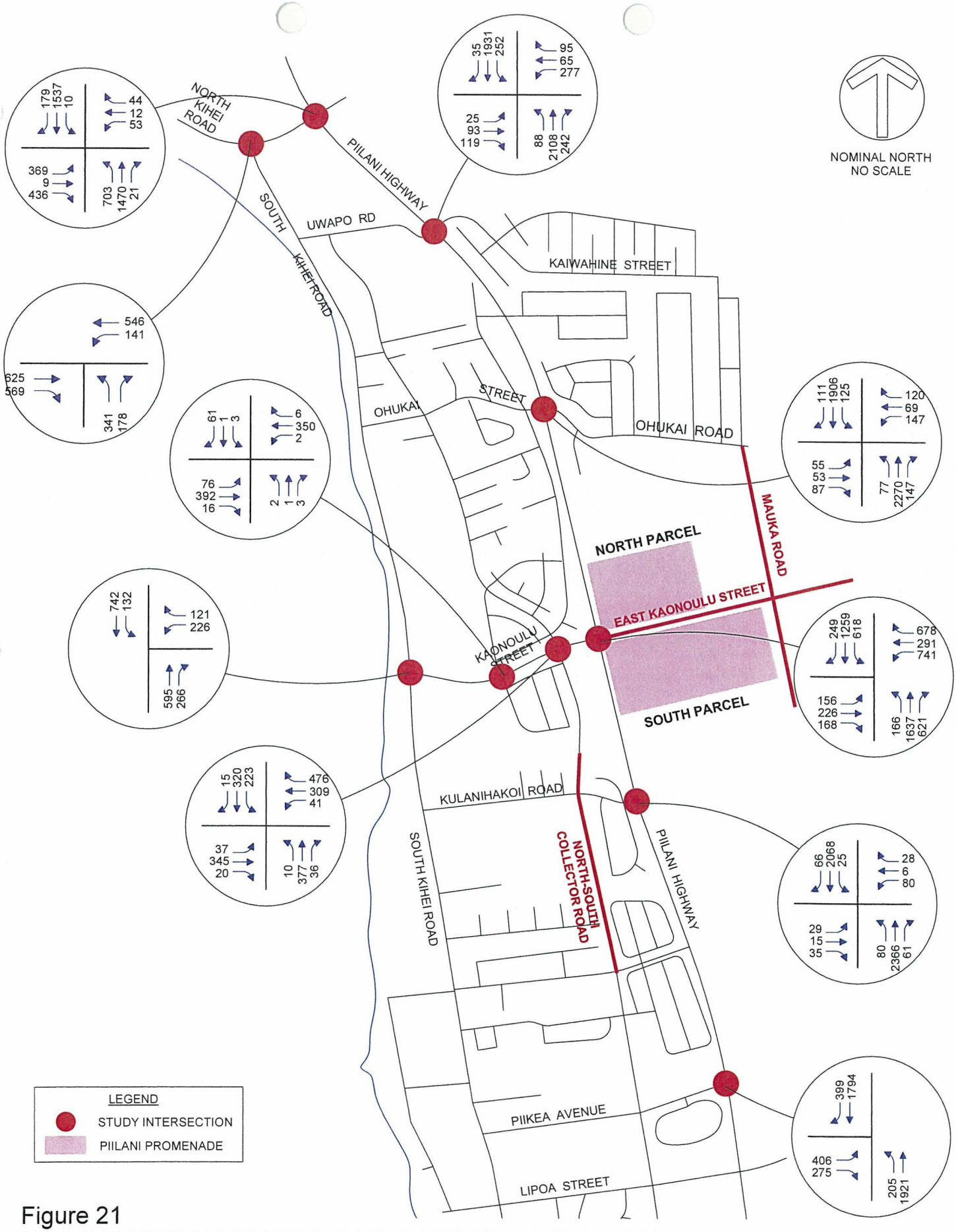

Figure 21
2025 BACKGROUND WEEKDAY PM PEAK HOUR PROJECTIONS

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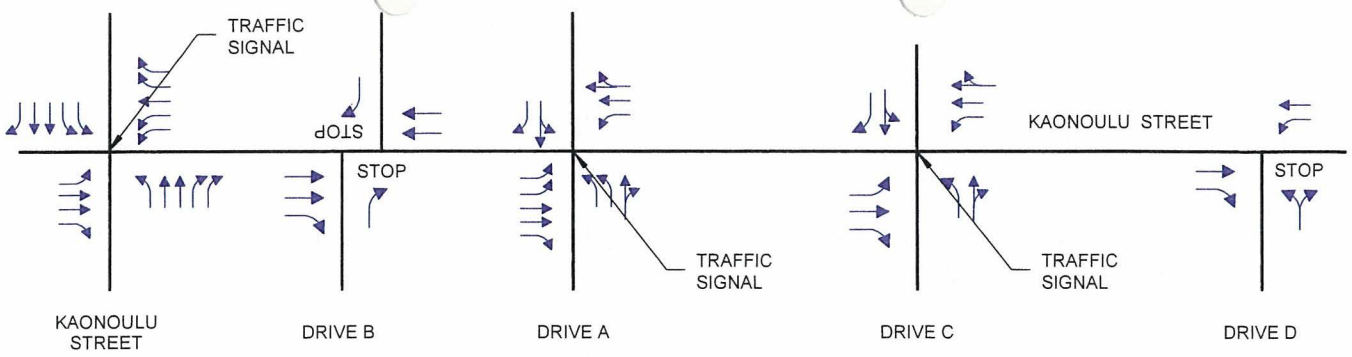
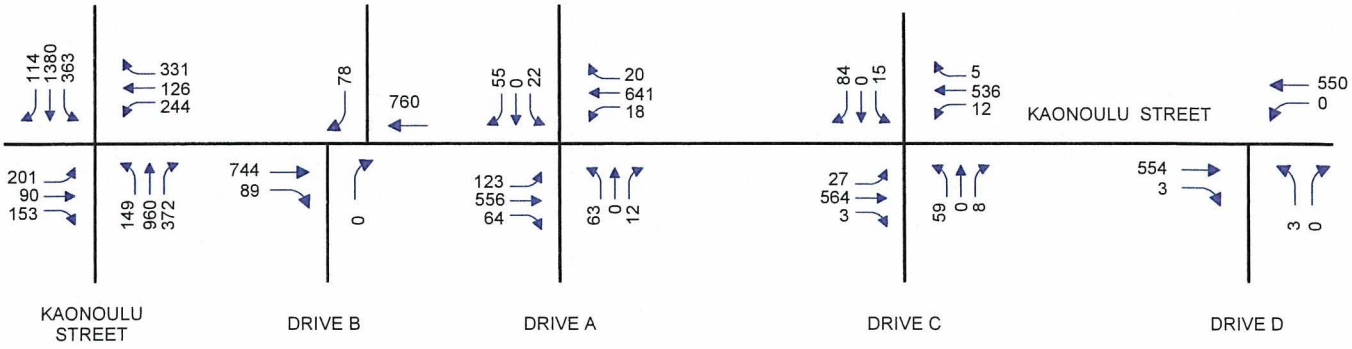
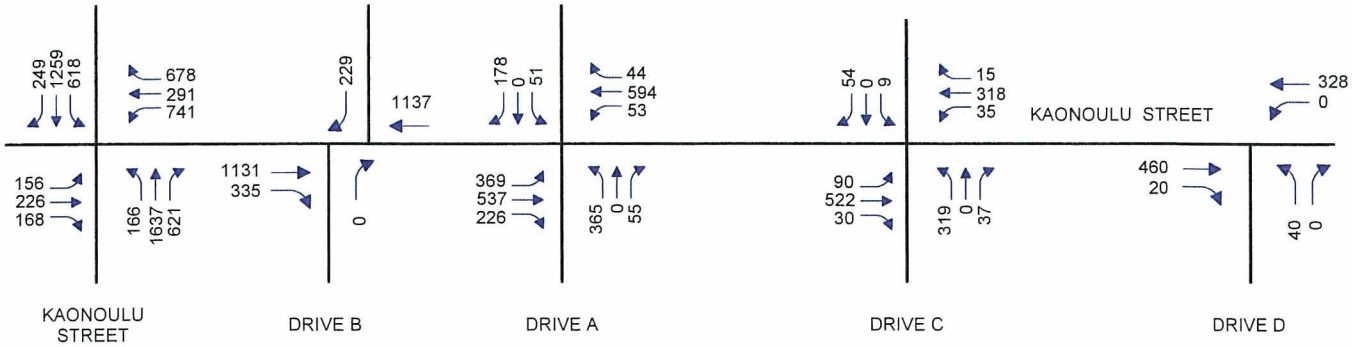
Figure 22 2025 Peak Hour Projections at Project Driveways



RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR

NOTES
1. PROJECTIONS OF ADJACENT INTERSECTIONS MAY NOT MATCH BECAUSE OF ROUNDING.

Figure 22
2025 TRAFFIC PROJECTIONS AT PROJECT DRIVEWAYS

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7. INTERSECTION DESIGN REQUIREMENTS

Based on discussions with State of Hawaii Department of Transportation, it is understood that the Upcountry Highway will not be constructed until several years after Piilani Promenade has been completed. However, East Kaonoulu east of Piilani Highway should be constructed with capacity to accommodate Upcountry Highway traffic. The intersections along East Kaonoulu Street, including the intersection of Piilani Highway at East Kaonoulu Street, are to be constructed with capacity to accommodate traffic associated with the Upcountry Highway as well as traffic generated by the Piilani Promenade project.

This chapter describes the methodology used to estimate future design volumes of the intersections of Piilani Highway at East Kaonoulu Street and East Kaonoulu Street at Drive A to determine the design requirements of the intersections without and with the Upcountry Highway.

Required Left Turn Storage Lane Lengths

The left turn storage lengths required to accommodate estimated traffic volumes were calculated using guidelines in *A Policy on Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials. There are separate policies for signalized and unsignalized intersections. Based on this policy, the assumptions used to determine the required lengths of the left turn storage lanes are:

1. For signalized intersections, the length of the left turn storage lane should be "1.5 to 2.0 times the average number of vehicles that would store per cycle, which is predicted on the design volume."

2. For unsignalized intersections, the length of the left turn storage lane is "based on the number of vehicles likely to arrive in an average 2-minute period within the peak hour. As a minimum requirement, space for at least two passenger cars should be provided; with over 10 percent truck traffic, provisions should be made for at least one car and one truck."

3. The average length required per vehicle is 25 feet.

Left Turn Storage Lane Requirements Without Upcountry Highway

Using the above criteria, the turn storage lane requirements were calculated and the results are summarized in Table 21. Also shown are the storage lane length recommended. Figure 23 is a schematic drawing of the proposed lane configurations along East Kaonoulu Street between Piilani Highway and Drive D.

Table 21 Left Turn Storage Lane Requirements Without Upcountry Highway

Intersection	Approach & Time Period		Design Volume	Cycle Length (Seconds)	Cycles per Hour	Average Vehicles per Cycle	Recommended Length (1)				Recommendation
							Minimum		Desirable		
							Veh	Ft	Veh	Ft	
Piilani Hwy at Kaonoulu Street	EB	AM	77	125	29	3	5	125	6	150	1 Lane at 200 ft
		PM	76	180	20	4	6	150	8	200	
		Sat	98	150	24	4	6	150	8	200	
	WB	AM	121	125	29	4	6	150	8	200	2 Lanes with 1350 ft Total
		PM	528	180	20	26	39	975	52	1300	
		Sat	658	150	24	27	41	1025	54	1350	
	NB	AM	116	125	29	4	6	150	8	200	1 Lane at 350 ft
		PM	140	180	20	7	11	275	14	350	
		Sat	135	150	24	6	9	225	12	300	
	SB	AM	119	125	29	4	6	150	8	200	2 Lanes with 1250 ft Total
		PM	396	180	20	20	30	750	40	1000	
		Sat	596	150	24	25	38	950	50	1250	
East Kaonoulu Street at Drive A	EB	AM	100	60	60	2	3	75	4	100	2 Lanes with 500 ft Total
		PM	380	90	40	10	15	375	20	500	
		Sat	434	75	48	9	14	350	18	450	
	WB	AM	57	60	60	1	2	50	2	50	1 lane at 60 ft.
		PM	53	90	40	1	2	50	2	50	
		Sat	71	75	48	1	2	50	2	50	

NOTE:
(1) Minimum queue length is 1.5 time average number of vehicles. Desirable queue length is 2.0 time average number of vehicles.

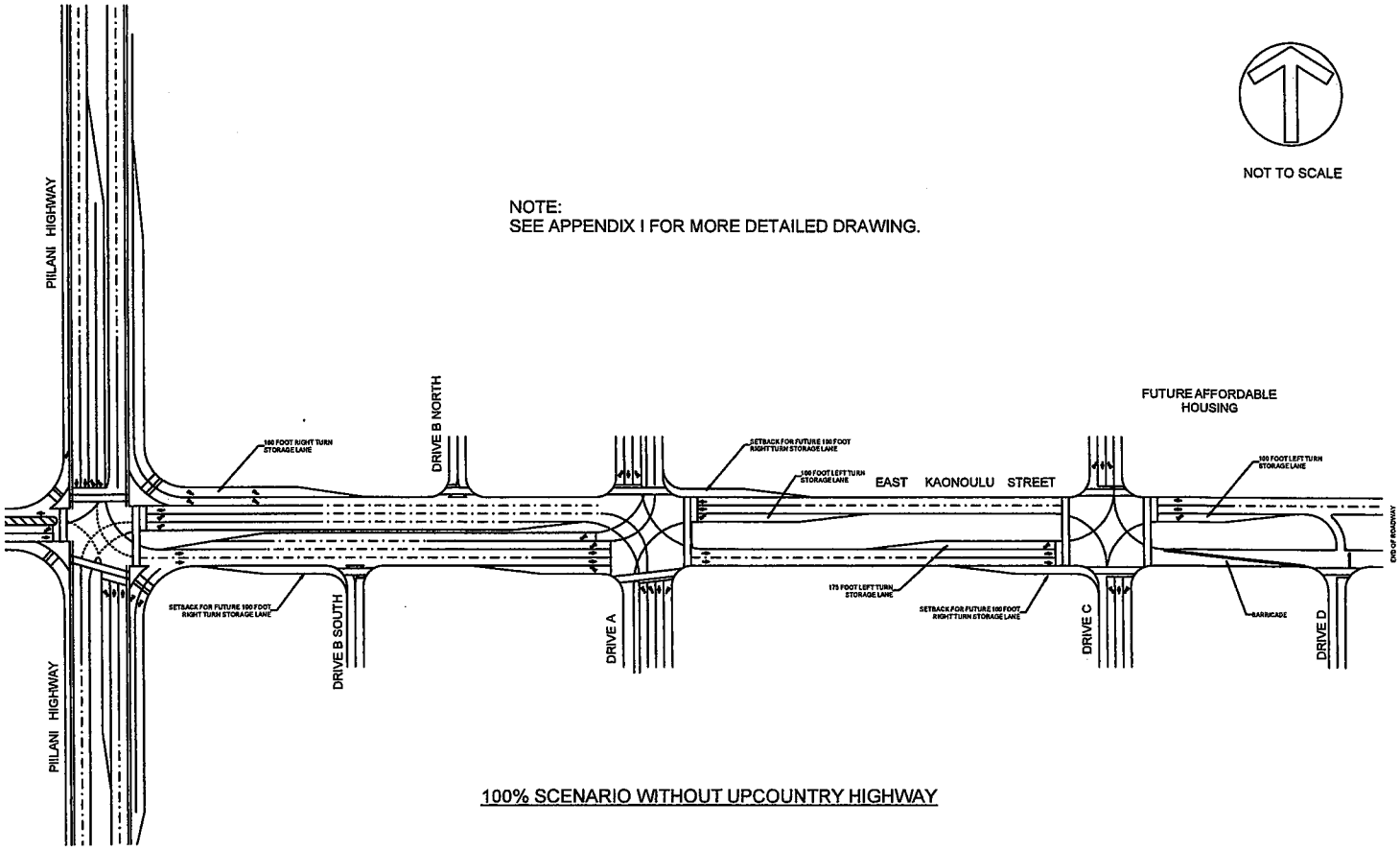

Figure 23
SCHEMATIC DRAWING OF EAST KAONOULU STREET

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Left Turn Storage Lane Requirements With Upcountry Highway

Using the AASHTO standards described in the previous section, the left turn storage lengths required to accommodate Upcountry Highway traffic plus Piilani Promenade traffic was estimated. The results are presented in Table 22. A comparison of the required lengths without versus with the Upcountry Highway as calculated using the AASHTO standards is presented in Table 23.

Table 22 Left Turn Storage Lane Requirements With Upcountry Highway

Intersection	Approach & Time Period		Design Volume	Cycle Length (Seconds)	AASHTO Method						95th Percentile Queue (2)	Provided (3)
					Cycles per Hour	Average Vehicles per Cycle	Recommended Length (1)					
							Minimum		Desirable			
							Veh	Ft	Veh	Ft		
Piilani Hwy at Kaonoulu Street	EB	AM	201	125	29	7	11	275	14	350	213	1 Lane at 400 ft
		PM	156	180	20	8	12	300	16	400	166	
	WB	AM	244	125	29	8	12	300	16	400	209	2 Lanes with 1850 ft Total
		PM	741	180	20	37	56	1400	74	1850	478	
	NB	AM	149	125	29	5	8	200	10	250	315	1 Lane at 400 ft
		PM	166	180	20	8	12	300	16	400	306	
	SB	AM	363	125	29	13	20	500	26	650	297	2 Lanes with 1550 ft Total
		PM	618	180	20	31	47	1175	62	1550	493	
East Kaonoulu Street at Drive A	EB	AM	123	60	60	2	3	75	4	100	95	2 Lanes with 450 ft Total
		PM	369	90	40	9	14	350	18	450	286	
	WB	AM	18	60	60	0	0	0	0	0	15	1 lane at 60 ft.
		PM	53	90	40	1	2	50	2	50	27	

NOTE:
(1) Minimum queue length is 1.5 time average number of vehicles. Desirable queue length is 2.0 time average number of vehicles.
(2) 95th percentile calculated by Synchro. See Appendix H.
(3) See Appendix I.

Table 23 Comparison of Left Turn Storage Lane Requirements Without versus With Upcountry Highway

Intersection	Approach	Recommended Left Turn Storage Lengths	
		Without Upcountry Highway	With Upcountry Highway
Piilani Hwy at Kaonoulu Street	EB	1 lane at 300 ft	1 lane at 400 ft
	WB	2 lanes with 1050 ft Total	2 lanes with 1850 ft Total
	NB	1 lane at 450 ft	1 lane at 400 ft
	SB	2 lanes with 1080 ft Total	2 lanes with 1550 ft Total
East Kaonoulu Street at Drive A	EB	2 lanes with 840 ft Total	2 lanes with 450 ft Total
	WB	1 lane at 60 ft.	1 lane at 60 ft.

Roundabout Analysis

The viability of providing a roundabout at the intersection of Piilani Highway at Kaonoulu Street was assessed and the results are summarized in Table 24. Shown are the high and low volume-to-capacity ratios. High and low volume-to-capacity ratios are reported since there is a learning process as drivers learn to drive a roundabout. The high volume-to-capacity ratio would be the condition expected after the roundabout has been in use sufficiently long for drivers to learn to drive the roundabout.

The roundabout analysis was performed to different scenarios of configuration. The number of lanes was varied from one to three lanes and the inside radius was varied from 25 to 80 feet. The data reported was the same for all scenarios.

Table 24 Roundabout Analysis of Piilani Highway at Kaonoulu Street

	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
Approach	High V/C	Low V/C	High V/C	Low V/C	High V/C	Low V/C
Eastbound	0.62	0.89	1.66	2.51	2.24	3.36
Westbound	0.45	0.61	2.62	3.68	1.99	2.63
Northbound	1.19	1.45	2.26	2.84	1.97	2.54
Southbound	1.85	2.25	3.01	3.85	3.18	4.14

8. TRANSPORTATION MANAGEMENT PLAN

Purpose and Approach of the Transportation Management Plan

The purpose of the Transportation Management Plan (TMP) is typically to identify and describe transportation management strategies to reduce travel demand, primarily "single-occupancy private vehicles", or to redistribute demand in time. These strategies should accomplish the following:

1. Reduce the need for employees and customers of Piilani Promenade to use "single-occupancy private vehicles" by encouraging the use of alternative modes of transportation, such as walking, biking, and public transportation and ride sharing.

2. Provide alternative modes and facilities for these alternative modes.

3. Coordinate the establishment of programs, such as carpools and other ride sharing programs, that reduce the amount of traffic generated by the project.

Transportation Management Plan Strategies

1. A Transportation Coordinator should be designated by the developer or property manager. The Transportation Coordinator will be responsible for establishing, coordinating and managing the TMP strategies identified in the plan. The Transportation Coordinator should also document any traffic related complaints

received from the surrounding community.

2. Employers should allow flexible work hours. Examples of flexible work hour are:

   A. Start the work day such that employees get to work before or after the weekday commute peak hours.

   B. Some employees have scheduled four 10-hour work days per week, with alternating Monday through Thursday and Tuesday through Friday work weeks. Every other week end is a four day weekend. Employees are divided into two groups so that offices are always covered with half the staff on the alternating Monday and Fridays.

3. The Transportation Coordinator should establish and coordinate a ride sharing program for employees. Since the Transportation Coordinator is employed by the developer or property manager, employees of various employers of Piilani Promenade can be brought into the program, not those from just a single major employer.

4. The Transportation Coordinator should coordinate with the Maui Department of Transportation to establish bus routes to provide service between the project, hotels and Kihei.

5. Bus passes should be provided to employees free or at a subsidized price.

6. Bus stops should be provided within the project that will minimize walking distances to the various businesses in the project.

7. The Transportation Coordinator should coordinate with the hotels, especially those in Kihei and adjacent area, to provide shuttle bus service between the hotels and Piilani Promenade.

8. A voucher program should be established for employees that participate in one of the ride sharing programs or bus pass programs and have to leave work for family emergencies.

9. Preferential parking spaces should be provided for employees participating it in ride sharing programs.

10. Secure bicycle storage facilities should be provided at several locations within the project. Showers for employees should also be considered.

11. Pedestrian walkways should be designated within the parking lot area to encourage pedestrian circulation and enhance safety of pedestrians between the roadways and buildings.

Appendix A
Traffic County Summary Worksheets

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Ohukai Street
DAY & DATE: Thursday, May 9, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am	3	149	20	20	5	23	3	121	0	3	8	12	367
2	6:15 am	7	202	15	26	6	30	1	136	6	6	10	12	457
3	6:30 am	8	254	19	35	5	35	2	183	4	12	13	30	600
4	6:45 am	10	282	32	38	2	26	12	218	3	23	17	29	692
5	7:00 am	8	230	25	54	8	40	5	257	11	19	16	26	699
6	7:15 am	5	228	30	49	11	50	6	201	7	27	20	16	650
7	7:30 am	8	438	45	42	14	57	12	332	6	32	34	21	1041
8	7:45 am	16	363	51	51	11	65	11	227	4	15	23	15	852
9	8:00 am	7	282	31	45	7	51	5	199	6	21	8	23	685
10	8:15 am	13	280	40	39	8	37	12	253	9	11	23	18	743
11	8:30 am	12	280	28	35	10	34	13	250	10	13	12	16	713
12	8:45 am	11	224	38	24	14	37	7	185	4	19	15	14	592
13	9:00 am													0
14	9:15 am													0
	Maximum:	16	438	51	51	14	65	12	332	9	32	34	23	1041

Hourly Volume of Each Movement

6:00 am	7:00 am	28	887	86	119	18	114	18	658	13	44	48	83	2116
6:15 am	7:15 am	33	968	91	153	21	131	20	794	24	60	56	97	2448
6:30 am	7:30 am	31	994	106	176	26	151	25	859	25	81	66	101	2641
6:45 am	7:45 am	31	1178	132	183	35	173	35	1008	27	101	87	92	3082
7:00 am	8:00 am	37	1259	151	196	44	212	34	1017	28	93	93	78	3242
7:15 am	8:15 am	36	1311	157	187	43	223	34	959	23	95	85	75	3228
7:30 am	8:30 am	44	1363	167	177	40	210	40	1011	25	79	88	77	3321
7:45 am	8:45 am	48	1205	150	170	36	187	41	929	29	60	66	72	2993
8:00 am	9:00 am	43	1066	137	143	39	159	37	887	29	64	58	71	2733
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		44	1363	167	177	40	210	40	1011	25	79	88	77	3321
Per Cent of Approach		3%	87%	11%	41%	9%	49%	4%	94%	2%	32%	36%	32%	
Peak Hour Factor:		0.69	0.78	0.82	0.87	0.71	0.81	0.83	0.76	0.69	0.62	0.65	0.84	0.8
Total Arrivals			1574			427			1076			244		
Total Departures			1265			295			1652			109		
Total			2839			722			2728			353		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Ohukai Street
DAY & DATE: Thursday, May 9, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	10	325	21	41	14	62	10	268	21	11	14	15	812
2	3:15 pm	12	269	32	35	13	43	12	234	21	11	14	17	713
3	3:30 pm	11	301	39	42	11	49	11	321	20	10	9	17	841
4	3:45 pm	11	297	37	40	22	59	11	313	30	19	14	24	877
5	4:00 pm	14	361	27	37	13	45	14	356	23	21	16	17	944
6	4:15 pm	22	324	37	44	15	46	22	346	18	19	23	23	939
7	4:30 pm	9	290	37	47	16	54	9	364	33	22	23	24	928
8	4:45 pm	11	263	25	47	14	55	11	264	26	17	25	20	778
9	5:00 pm	17	308	35	53	16	70	17	295	22	25	24	17	899
10	5:15 pm	14	340	29	33	15	48	14	322	26	17	18	10	886
11	5:30 pm	12	245	32	27	11	33	12	175	15	9	11	18	600
12	5:45 pm	13	286	30	29	13	38	13	250	22	9	16	20	739
13	6:00 pm													0
14	6:15 pm													0
	Maximum:	22	361	37	47	22	59	22	364	33	22	23	24	944

Hourly Volume of Each Movement

3:00 pm	4:00 pm	44	1192	129	158	60	213	44	1136	92	51	51	73	3243
3:15 pm	4:15 pm	48	1228	135	154	59	196	48	1224	94	61	53	75	3375
3:30 pm	4:30 pm	58	1283	140	163	61	199	58	1336	91	69	62	81	3601
3:45 pm	4:45 pm	56	1272	138	168	66	204	56	1379	104	81	76	88	3688
4:00 pm	5:00 pm	56	1238	126	175	58	200	56	1330	100	79	87	84	3589
4:15 pm	5:15 pm	59	1185	134	191	61	225	59	1269	99	83	95	84	3544
4:30 pm	5:30 pm	51	1201	126	180	61	227	51	1245	107	81	90	71	3491
4:45 pm	5:45 pm	54	1156	121	160	56	206	54	1056	89	68	78	65	3163
5:00 pm	6:00 pm	56	1179	126	142	55	189	56	1042	85	60	69	65	3124
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		56	1272	138	168	66	204	56	1379	104	81	76	88	3688
Per Cent of Approach		4%	87%	9%	38%	15%	47%	4%	90%	7%	33%	31%	36%	
Peak Hour Factor:		0.64	0.88	0.93	0.89	0.75	0.86	0.64	0.95	0.79	0.92	0.83	0.92	0.98
Total Arrivals			1466			438			1539			245		
Total Departures			1635			270			1557			226		
Total			3101			708			3096			471		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Ohukai Street
DAY & DATE: Saturday, May 18, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	5	184	25	13	16	20	11	226	8	40	12	35	595
2	10:15 am	14	206	31	16	19	21	24	246	5	25	14	34	655
3	10:30 am	7	207	23	14	11	20	25	233	10	29	11	39	629
4	10:45 am	11	242	36	13	18	17	28	275	10	39	8	41	738
5	11:00 am	17	160	18	14	11	16	18	130	8	28	14	37	471
6	11:15 am	8	173	26	11	21	19	27	221	6	24	12	22	570
7	11:30 am	16	231	38	12	14	15	15	234	13	22	18	42	670
8	11:45 am	15	303	29	12	20	29	38	300	14	44	18	42	864
9	12:00 pm	8	146	15	6	10	8	12	127	9	22	9	18	390
10	12:15 pm	14	232	25	13	16	15	23	218	11	32	9	44	652
11	12:30 pm	21	262	26	6	16	15	29	248	4	39	9	41	716
12	12:45 pm	18	312	38	13	18	15	16	242	13	33	11	48	777
13	1:00 pm													0
14	1:15 pm													0
15	1:30 pm													0
16	1:45 pm													0
		21	303	29	13	20	29	38	300	14	44	18	44	864

Hourly Volume of Each Movement

10:00 am	11:00 am	37	839	115	56	64	78	88	980	33	133	45	149	2617
10:15 am	11:15 am	49	815	108	57	59	74	95	884	33	121	47	151	2493
10:30 am	11:30 am	43	782	103	52	61	72	98	859	34	120	45	139	2408
10:45 am	11:45 am	52	806	118	50	64	67	88	860	37	113	52	142	2449
11:00 am	12:00 pm	56	867	111	49	66	79	98	885	41	118	62	143	2575
11:15 am	12:15 pm	47	853	108	41	65	71	92	882	42	112	57	124	2494
11:30 am	12:30 pm	53	912	107	43	60	67	88	879	47	120	54	146	2576
11:45 am	12:45 pm	58	943	95	37	62	67	102	893	38	137	45	145	2622
12:00 pm	1:00 pm	61	952	104	38	60	53	80	835	37	126	38	151	2535
12:15 pm	1:15 pm													
12:30 pm	1:30 pm													
12:45 pm	1:45 pm													
1:00 pm	2:00 pm													
Peak Hour Volume		58	943	95	37	62	67	102	893	38	137	45	145	2622
Per Cent of Approach		5%	86%	9%	22%	37%	40%	10%	86%	4%	42%	14%	44%	
Peak Hour Factor:		0.69	0.78	0.82	0.71	0.78	0.58	0.67	0.74	0.68	0.78	0.63	0.82	
Total Arrivals			1096			166			1033			327		
Total Departures			1075			242			1147			158		
Total			2171			408			2180			485		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaiwahine Street and Uwapo Road
DAY & DATE: Friday, May 10, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am	1	136	5	8	0	7	1	126	1	12	0	7	304
2	6:15 am	4	217	7	6	1	15	8	171	7	21	6	19	482
3	6:30 am	5	221	8	9	4	17	13	245	1	33	3	18	577
4	6:45 am	1	185	7	8	2	16	7	231	1	27	4	20	509
5	7:00 am	5	272	6	23	7	17	10	355	2	44	7	37	785
6	7:15 am	4	274	12	20	5	9	15	310	5	32	3	43	732
7	7:30 am	6	339	5	25	9	19	6	328	5	18	2	29	791
8	7:45 am	6	292	6	16	5	8	15	234	5	12	3	29	631
9	8:00 am	2	380	10	19	5	3	14	254	11	25	5	23	751
10	8:15 am	4	239	10	13	2	16	9	243	1	12	0	22	571
11	8:30 am	2	223	8	8	6	13	9	260	6	23	2	16	576
12	8:45 am	4	227	12	9	1	10	6	256	9	23	4	16	577
13	9:00 am													0
14	9:15 am													0
	Maximum:	6	339	12	25	9	19	15	355	5	44	7	43	791

Hourly Volume of Each Movement

6:00 am	7:00 am	11	759	27	31	7	55	29	773	10	93	13	64	1872
6:15 am	7:15 am	15	895	28	46	14	65	38	1002	11	125	20	94	2353
6:30 am	7:30 am	15	952	33	60	18	59	45	1141	9	136	17	118	2603
6:45 am	7:45 am	16	1070	30	76	23	61	38	1224	13	121	16	129	2817
7:00 am	8:00 am	21	1177	29	84	26	53	46	1227	17	106	15	138	2939
7:15 am	8:15 am	18	1285	33	80	24	39	50	1126	26	87	13	124	2905
7:30 am	8:30 am	18	1250	31	73	21	46	44	1059	22	67	10	103	2744
7:45 am	8:45 am	14	1134	34	56	18	40	47	991	23	72	10	90	2529
8:00 am	9:00 am	12	1069	40	49	14	42	38	1013	27	83	11	77	2475
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		21	1177	29	84	26	53	46	1227	17	106	15	138	2939
Per Cent of Approach		2%	96%	2%	52%	16%	33%	4%	95%	1%	41%	6%	53%	
Peak Hour Factor:		0.88	0.87	0.6	0.84	0.72	0.7	0.77	0.86	0.85	0.6	0.54	0.8	0.93
Total Arrivals			1227			163			1290			259		
Total Departures			1449			90			1336			64		
Total			2676			253			2626			323		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaiwahine Street and Uwapo Road
DAY & DATE: Friday, May 10, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	10	297	16	12	3	5	15	266	12	13	3	15	667
2	3:15 pm	15	332	17	10	4	7	13	317	7	19	4	20	765
3	3:30 pm	14	313	21	15	6	6	12	317	13	12	0	15	744
4	3:45 pm	14	327	24	14	8	5	27	326	11	12	1	23	792
5	4:00 pm	13	348	18	16	8	8	27	346	9	25	2	16	836
6	4:15 pm	20	339	23	15	15	7	24	382	14	21	4	21	885
7	4:30 pm	17	329	15	8	8	3	16	370	14	21	5	18	824
8	4:45 pm	19	306	13	13	18	11	18	315	6	18	3	18	758
9	5:00 pm	14	320	20	14	17	10	30	277	8	17	3	19	749
10	5:15 pm	15	331	17	19	16	6	20	307	12	20	3	11	777
11	5:30 pm	14	282	14	15	9	9	11	236	9	20	4	15	638
12	5:45 pm	17	295	22	13	11	7	15	213	5	16	6	15	635
13	6:00 pm													0
14	6:15 pm													0
	Maximum:	20	348	24	16	15	8	27	382	14	25	5	23	885

Hourly Volume of Each Movement

3:00 pm	4:00 pm	53	1269	78	51	21	23	67	1226	43	56	8	73	2968
3:15 pm	4:15 pm	56	1320	80	55	26	26	79	1306	40	68	7	74	3137
3:30 pm	4:30 pm	61	1327	86	60	37	26	90	1371	47	70	7	75	3257
3:45 pm	4:45 pm	64	1343	80	53	39	23	94	1424	48	79	12	78	3337
4:00 pm	5:00 pm	69	1322	69	52	49	29	85	1413	43	85	14	73	3303
4:15 pm	5:15 pm	70	1294	71	50	58	31	88	1344	42	77	15	76	3216
4:30 pm	5:30 pm	65	1286	65	54	59	30	84	1269	40	76	14	66	3108
4:45 pm	5:45 pm	62	1239	64	61	60	36	79	1135	35	75	13	63	2922
5:00 pm	6:00 pm	60	1228	73	61	53	32	76	1033	34	73	16	60	2799
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		64	1343	80	53	39	23	94	1424	48	79	12	78	3337
Per Cent of Approach		4%	90%	5%	46%	34%	20%	6%	91%	3%	47%	7%	46%	
Peak Hour Factor:		0.8	0.96	0.83	0.83	0.65	0.72	0.87	0.93	0.86	0.79	0.6	0.85	0.94
Total Arrivals			1487			115			1566			169		
Total Departures			1555			186			1445			151		
Total			3042			301			3011			320		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaiwahine Street and Uwapo Road
DAY & DATE: Saturday, May 11, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	5	185	7	11	3	12	16	277	5	20	2	17	560
2	10:15 am	9	203	9	14	3	9	10	323	5	15	1	13	614
3	10:30 am	10	168	9	13	1	12	8	280	5	20	5	11	542
4	10:45 am	11	198	9	10	7	9	15	256	5	22	5	6	553
5	11:00 am	12	250	10	8	3	6	9	335	4	15	6	15	673
6	11:15 am	12	225	11	6	5	11	12	276	7	9	1	9	584
7	11:30 am	10	267	15	14	3	10	12	165	8	16	2	15	537
8	11:45 am	6	234	10	9	4	13	12	241	7	12	1	15	564
9	12:00 pm	12	243	13	9	2	10	15	278	12	15	3	12	624
10	12:15 pm	10	221	14	6	9	12	17	266	9	11	2	15	592
11	12:30 pm	11	278	17	11	3	13	11	259	2	10	3	11	629
12	12:45 pm	9	327	13	12	10	10	11	252	5	15	5	18	687
13	1:00 pm	9	292	18	12	11	9	10	255	5	14	1	10	646
14	1:15 pm	21	262	17	6	6	5	13	227	3	9	1	13	583
15	1:30 pm	10	316	15	9	9	9	12	271	12	18	3	19	703
16	1:45 pm	6	244	11	14	5	14	17	204	4	10	8	14	551
	Maximum:	21	327	18	12	11	10	13	271	12	18	5	19	703

Hourly Volume of Each Movement

10:00 am	11:00 am	35	754	34	48	14	42	49	1136	20	77	13	47	2269
10:15 am	11:15 am	42	819	37	45	14	36	42	1194	19	72	17	45	2382
10:30 am	11:30 am	45	841	39	37	16	38	44	1147	21	66	17	41	2352
10:45 am	11:45 am	45	940	45	38	18	36	48	1032	24	62	14	45	2347
11:00 am	12:00 pm	40	976	46	37	15	40	45	1017	26	52	10	54	2358
11:15 am	12:15 pm	40	969	49	38	14	44	51	960	34	52	7	51	2309
11:30 am	12:30 pm	38	965	52	38	18	45	56	950	36	54	8	57	2317
11:45 am	12:45 pm	39	976	54	35	18	48	55	1044	30	48	9	53	2409
12:00 pm	1:00 pm	42	1069	57	38	24	45	54	1055	28	51	13	56	2532
12:15 pm	1:15 pm	39	1118	62	41	33	44	49	1032	21	50	11	54	2554
12:30 pm	1:30 pm	50	1159	65	41	30	37	45	993	15	48	10	52	2545
12:45 pm	1:45 pm	49	1197	63	39	36	33	46	1005	25	56	10	60	2619
1:00 pm	2:00 pm	46	1114	61	41	31	37	52	957	24	51	13	56	2483
Peak Hour Volume		49	1197	63	39	36	33	46	1005	25	56	10	60	2619
Per Cent of Approach		4%	92%	46%	36%	31%	3%	4%	93%	27%	44%	0%	2%	
Peak Hour Factor:		0.58	0.92	0.88	0.81	0.82	0.83	0.88	0.93	0.52	0.78	0.5	0.79	0.93

Total Arrivals	1309	108	1076	126
Total Departures	1104	119	1286	110
Total	2413	227	2362	236

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at North Kihei Road
DAY & DATE: Thursday, May 16, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am	9	137	10	1	2	0	6	110	41	38	1	24	379
2	6:15 am	12	144	9	0	0	2	7	123	80	52	1	16	446
3	6:30 am	24	176	14	2	2	5	9	181	74	52	3	30	572
4	6:45 am	23	161	14	4	1	1	8	202	89	53	5	26	587
5	7:00 am	29	234	2	1	0	5	4	321	92	76	20	65	849
6	7:15 am	29	275	0	1	1	3	1	319	129	68	0	44	870
7	7:30 am	24	228	1	1	1	5	1	208	53	67	0	38	627
8	7:45 am	28	256	0	1	0	1	2	249	67	87	0	44	735
9	8:00 am	32	257	2	1	1	3	6	192	68	73	1	37	673
10	8:15 am	29	186	1	0	0	1	4	164	51	57	0	55	548
11	8:30 am	27	206	2	4	0	1	2	211	60	57	0	49	619
12	8:45 am	23	187	1	5	1	1	0	222	68	57	0	38	603
13	9:00 am													0
14	9:15 am													0
	Maximum:	29	275	2	1	1	5	4	321	129	87	20	65	870

Hourly Volume of Each Movement

6:00 am	7:00 am	68	618	47	7	5	8	30	616	284	195	10	96	1984
6:15 am	7:15 am	88	715	39	7	3	13	28	827	335	233	29	137	2454
6:30 am	7:30 am	105	846	30	8	4	14	22	1023	384	249	28	165	2878
6:45 am	7:45 am	105	898	17	7	3	14	14	1050	363	264	25	173	2933
7:00 am	8:00 am	110	993	3	4	2	14	8	1097	341	298	20	191	3081
7:15 am	8:15 am	113	1016	3	4	3	12	10	968	317	295	1	163	2905
7:30 am	8:30 am	113	927	4	3	2	10	13	813	239	284	1	174	2583
7:45 am	8:45 am	116	905	5	6	1	6	14	816	246	274	1	185	2575
8:00 am	9:00 am	111	836	6	10	2	6	12	789	247	244	1	179	2443
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		110	993	3	4	2	14	8	1097	341	298	20	191	3081
Per Cent of Approach		10%	90%	0%	20%	10%	70%	1%	76%	24%	59%	4%	38%	
Peak Hour Factor:		0.95	0.9	0.38	1	0.5	0.7	0.5	0.85	0.66	0.86	0.25	0.73	0.89
Total Arrivals			1106			20			1446			509		
Total Departures			1292			31			1305			453		
Total			2398			51			2751			962		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at North Kihei Road
DAY & DATE: Tuesday, May 14, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	39	266	4	1	0	1	3	228	65	34	0	62	703
2	3:15 pm	42	262	5	0	0	1	8	222	84	32	2	91	749
3	3:30 pm	40	280	4	32	3	20	5	285	90	62	3	81	905
4	3:45 pm	49	260	1	8	7	8	2	239	98	43	3	115	833
5	4:00 pm	48	323	0	4	2	4	0	298	104	59	1	72	915
6	4:15 pm	23	175	0	1	0	0	1	177	65	20	1	61	524
7	4:30 pm	47	284	0	1	1	2	2	324	115	48	0	77	901
8	4:45 pm	44	247	1	1	0	4	0	264	120	23	0	85	789
9	5:00 pm	59	244	0	3	0	0	1	247	75	36	3	74	742
10	5:15 pm	45	298	0	1	1	2	5	246	75	53	0	95	821
11	5:30 pm	36	277	0	3	0	2	0	231	77	32	2	92	752
12	5:45 pm	29	240	0	1	0	0	1	214	57	25	0	70	637
13	6:00 pm													0
14	6:15 pm													0
	Maximum:	49	323	5	32	7	20	8	298	104	62	3	115	915

Hourly Volume of Each Movement

3:00 pm	4:00 pm	170	1068	14	41	10	30	18	974	337	171	8	349	3190
3:15 pm	4:15 pm	179	1125	10	44	12	33	15	1044	376	196	9	359	3402
3:30 pm	4:30 pm	160	1038	5	45	12	32	8	999	357	184	8	329	3177
3:45 pm	4:45 pm	167	1042	1	14	10	14	5	1038	382	170	5	325	3173
4:00 pm	5:00 pm	162	1029	1	7	3	10	3	1063	404	150	2	295	3129
4:15 pm	5:15 pm	173	950	1	6	1	6	4	1012	375	127	4	297	2956
4:30 pm	5:30 pm	195	1073	1	6	2	8	8	1081	385	160	3	331	3253
4:45 pm	5:45 pm	184	1066	1	8	1	8	6	988	347	144	5	346	3104
5:00 pm	6:00 pm	169	1059	0	8	1	4	7	938	284	146	5	331	2952
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		179	1125	10	44	12	33	15	1044	376	196	9	359	3402
Per Cent of Approach		14%	86%	1%	49%	13%	37%	1%	73%	26%	35%	2%	64%	
Peak Hour Factor:		0.91	0.87	0.5	0.34	0.43	0.41	0.47	0.88	0.9	0.79	0.75	0.78	0.93
Total Arrivals			1314			89			1435			564		
Total Departures			1447			34			1354			567		
Total			2761			123			2789			1131		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at North Kihei Road
DAY & DATE: Saturday, May 11, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	25	145	4	1	0		1	156	47	40	1	49	469
2	10:15 am	9	143	1	0	0		0	268	52	30	1	86	590
3	10:30 am	42	143	2	0	2	2	0	245	70	29	0	33	568
4	10:45 am	35	227	0	0		0	0	297	51	50	0	70	730
5	11:00 am	21	190	0	5		0	3	253	57	57	0	42	628
6	11:15 am	40	202	0	1		3	1	258	57	67	2	46	677
7	11:30 am	30	194	2			0	1	201	58	62	1	55	604
8	11:45 am	43	214	2		1	0	0	220	56	64	0	36	636
9	12:00 pm	41	220	0		0	0	0	277	60	55	1	50	704
10	12:15 pm	39	172	0		0	0	0	194	57	44	1	33	540
11	12:30 pm	36	266	1		0	0	1	231	53	82	0	58	728
12	12:45 pm	42	205	3		0	1	0	195	61	91	0	23	621
13	1:00 pm	41	242	2	2	0	0	2	207	79	51	0	40	666
14	1:15 pm	38	258	0		0	0	1	210	70	86	0	60	723
15	1:30 pm	26	175	1		0	0	1	163	30	42	0	39	477
16	1:45 pm	43	214	1		0	0	0	196	61	56	0	43	614
	Maximum:	42	266	3	2	0	1	2	231	79	91	0	60	728

Hourly Volume of Each Movement

10:00 am	11:00 am	111	658	7	1	2	2	1	966	220	149	2	238	2357
10:15 am	11:15 am	107	703	3	5	2	2	3	1063	230	166	1	231	2516
10:30 am	11:30 am	138	762	2	6	2	5	4	1053	235	203	2	191	2603
10:45 am	11:45 am	126	813	2	6	0	3	5	1009	223	236	3	213	2639
11:00 am	12:00 pm	134	800	4	6	1	3	5	932	228	250	3	179	2545
11:15 am	12:15 pm	154	830	4	1	1	3	2	956	231	248	4	187	2621
11:30 am	12:30 pm	153	800	4	0	1	0	1	892	231	225	3	174	2484
11:45 am	12:45 pm	159	872	3	0	1	0	1	922	226	245	2	177	2608
12:00 pm	1:00 pm	158	863	4	0	0	1	1	897	231	272	2	164	2593
12:15 pm	1:15 pm	158	885	6	2	0	1	3	827	250	268	1	154	2555
12:30 pm	1:30 pm	157	971	6	2	0	1	4	843	263	310	0	181	2738
12:45 pm	1:45 pm	147	880	6	2	0	1	4	775	240	270	0	162	2487
1:00 pm	2:00 pm	148	889	4	2	0	0	4	776	240	235	0	182	2480
Peak Hour Volume		157	971	6	2	0	1	4	843	263	310	0	181	2738
Per Cent of Approach		14%	86%	1%	67%	0%	33%	0%	76%	24%	63%	0%	37%	
Peak Hour Factor:		0.93	0.91	0.5	0.25	0	0.25	0.5	0.91	0.83	0.85	0	0.75	0.94

Total Arrivals	1134	3	1110	491
Total Departures	1026	10	1282	420
Total	2160	13	2392	911

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: North Kihei Road at South Kihei Road
DAY & DATE: Thursday, May 16, 2013
START TIME: 6:30 am
END TIME: 8:30 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:30 am					82	14	30		100	28	52		306
2	6:45 am					94	20	33		94	45	66		352
3	7:00 am					92	18	43		107	35	60		355
4	7:15 am					117	22	37		105	48	73		402
5	7:30 am					95	21	52		84	54	83		389
6	7:45 am					55	21	45		96	51	81		349
7	8:00 am					67	27	38		73	56	70		331
8	8:15 am					70	28	38		76	37	48		297
	Maximum:					117	22	52		107	54	83		402

Hourly Volume of Each Movement

6:30 am	7:30 am	0	0	0	0	385	74	143	0	406	156	251	0	1415
6:45 am	7:45 am	0	0	0	0	398	81	165	0	390	182	282	0	1498
7:00 am	8:00 am	0	0	0	0	359	82	177	0	392	188	297	0	1495
7:15 am	8:15 am	0	0	0	0	334	91	172	0	358	209	307	0	1471
7:30 am	8:30 am	0	0	0	0	287	97	173	0	329	198	282	0	1366
Maximum Volume		0	0	0	0	398	81	165	0	390	182	282	0	1498
Per Cent of Approach		0%	0%	0%	0%	83%	17%	30%	0%	70%	39%	61%	0%	
Peak Hour Factor:		0	0	0	0	0.85	0.92	0.79	0	0.91	0.84	0.85	0	0.93

Total Arrivals	0	479	555	464
Total Departures	0	447	263	788
Total	0	926	818	1252

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: North Kihei Road at South Kihei Road
DAY & DATE: Tuesday, May 14, 2013
START TIME: 3:30 pm
END TIME: 5:30 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:30 pm					67	37	39		61	92	106		402
2	3:45 pm					90	37	39		67	104	92		429
3	4:00 pm					81	28	37		53	94	80		373
4	4:15 pm					83	42	30		54	102	85		396
5	4:30 pm					95	38	47		74	117	93		464
6	4:45 pm					85	36	47		63	119	87		437
7	5:00 pm					77	25	44		55	111	121		433
8	5:15 pm					80	41	23		60	110	78		392
	Maximum:					95	42	47		74	119	121		464

Hourly Volume of Each Movement

3:30 pm	4:30 pm	0	0	0	0	321	144	145	0	235	392	363	0	1600
3:45 pm	4:45 pm	0	0	0	0	349	145	153	0	248	417	350	0	1662
4:00 pm	5:00 pm	0	0	0	0	344	144	161	0	244	432	345	0	1670
4:15 pm	5:15 pm	0	0	0	0	340	141	168	0	246	449	386	0	1730
4:30 pm	5:30 pm	0	0	0	0	337	140	161	0	252	457	379	0	1726
Maximum Volume		0	0	0	0	340	141	168	0	246	449	386	0	1730
Per Cent of Approach		0%	0%	0%	0%	71%	29%	41%	0%	59%	54%	46%	0%	
Peak Hour Factor:		0	0	0	0	0.89	0.84	0.89	0	0.83	0.94	0.8	0	0.93

Total Arrivals	0	481	414	835
Total Departures	0	554	590	586
Total	0	1035	1004	1421

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: North Kihei Road at South Kihei Road
DAY & DATE: Saturday, May 4, 2013
START TIME: 12:00 pm
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach				East Approach		South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	12:00 pm					69	27	36		70	59	57		318
2	12:15 pm					65	28	27		49	64	60		293
3	12:30 pm					75	42	35		60	62	71		345
4	12:45 pm					62	37	34		64	70	56		323
5	1:00 pm					61	35	29		53	64	59		301
6	1:15 pm					69	26	31		76	74	68		344
7	1:30 pm					74	41	42		54	62	75		348
8	1:45 pm					68	27	34		61	78	68		336
9	2:00 pm													0
10	2:15 pm													0
11	2:30 pm													0
12	2:45 pm													0
13	3:00 pm													0
14	3:15 pm													0
15	3:30 pm													0
16	3:45 pm													0
	Maximum:					74	41	42		76	78	75		348

Hourly Volume of Each Movement

12:00 pm	1:00 pm	0	0	0	0	271	134	132	0	243	255	244	0	1279
12:15 pm	1:15 pm	0	0	0	0	263	142	125	0	226	260	246	0	1262
12:30 pm	1:30 pm	0	0	0	0	267	140	129	0	253	270	254	0	1313
12:45 pm	1:45 pm	0	0	0	0	266	139	136	0	247	270	258	0	1316
1:00 pm	2:00 pm	0	0	0	0	272	129	136	0	244	278	270	0	1329
1:15 pm	2:15 pm	0	0	0	0	211	94	107	0	191	214	211	0	1028
1:30 pm	2:30 pm	0	0	0	0	142	68	76	0	115	140	143	0	684
1:45 pm	2:45 pm	0	0	0	0	68	27	34	0	61	78	68	0	336
2:00 pm	3:00 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 pm	3:15 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 pm	3:30 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 pm	3:45 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 pm	4:00 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Volume		0	0	0	0	272	129	136	0	244	278	270	0	1329
Per Cent of Approach		0%	0%	0%	0%	68%	32%	36%	0%	64%	51%	49%	0%	
Peak Hour Factor:		0	0	0	0	0.92	0.79	0.81	0	0.8	0.89	0.9	0	0.95

Total Arrivals	0	401	380	548
Total Departures	0	406	407	516
Total	0	807	787	1064

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaonoulu Street
DAY & DATE: Thursday, May 16, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am	1	129						131	8	14		2	285
2	6:15 am	1	254						138	4	17		3	417
3	6:30 am	1	253						211	5	29		7	506
4	6:45 am	2	285						237	12	30		9	575
5	7:00 am	6	316						344	8	43		10	727
6	7:15 am	3	285						226	8	51		6	579
7	7:30 am	4	455						380	25	77		15	956
8	7:45 am	4	366						232	18	36		7	663
9	8:00 am	7	356						259	16	32		2	672
10	8:15 am	4	343						251	9	36		7	650
11	8:30 am	6	268						227	8	28		5	542
12	8:45 am	5	303						236	9	37		3	593
13	9:00 am													0
14	9:15 am													0
	Maximum:	7	455						380	25	77		15	956

Hourly Volume of Each Movement

6:00 am	7:00 am	5	921	0	0	0	0	0	717	29	90	0	21	1783
6:15 am	7:15 am	10	1108	0	0	0	0	0	930	29	119	0	29	2225
6:30 am	7:30 am	12	1139	0	0	0	0	0	1018	33	153	0	32	2387
6:45 am	7:45 am	15	1341	0	0	0	0	0	1187	53	201	0	40	2837
7:00 am	8:00 am	17	1422	0	0	0	0	0	1182	59	207	0	38	2925
7:15 am	8:15 am	18	1462	0	0	0	0	0	1097	67	196	0	30	2870
7:30 am	8:30 am	19	1520	0	0	0	0	0	1122	68	181	0	31	2941
7:45 am	8:45 am	21	1333	0	0	0	0	0	969	51	132	0	21	2527
8:00 am	9:00 am	22	1270	0	0	0	0	0	973	42	133	0	17	2457
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		19	1520	0	0	0	0	0	1122	68	181	0	31	2941
Per Cent of Approach		1%	99%	0%	0%	0%	0%	0%	94%	6%	85%	0%	15%	
Peak Hour Factor:		0.68	0.84	0	0	0	0	0	0.74	0.68	0.59	0	0.52	0.77

Total Arrivals	1539	0	1190	212
Total Departures	1153	0	1701	87
Total	2692	0	2891	299

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaonoulu Street
DAY & DATE: Thursday, May 16, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	12	320						359	22	29		4	746
2	3:15 pm	13	334						381	23	29		8	788
3	3:30 pm	10	381						401	20	25		5	842
4	3:45 pm	10	375						329	23	33		6	776
5	4:00 pm	7	335						380	22	28		4	776
6	4:15 pm	13	383						426	27	40		5	894
7	4:30 pm	11	334						357	29	22		5	758
8	4:45 pm	12	362						334	23	41		3	775
9	5:00 pm	6	366						414	20	38		9	853
10	5:15 pm	10	257						268	17	21		3	576
11	5:30 pm	9	288						232	22	28		6	585
12	5:45 pm	8	325						258	14	30		2	637
13	6:00 pm													0
14	6:15 pm													0
	Maximum:	13	383						426	27	40		6	894

Hourly Volume of Each Movement

3:00 pm	4:00 pm	45	1410	0	0	0	0	0	1470	88	116	0	23	3152
3:15 pm	4:15 pm	40	1425	0	0	0	0	0	1491	88	115	0	23	3182
3:30 pm	4:30 pm	40	1474	0	0	0	0	0	1536	92	126	0	20	3288
3:45 pm	4:45 pm	41	1427	0	0	0	0	0	1492	101	123	0	20	3204
4:00 pm	5:00 pm	43	1414	0	0	0	0	0	1497	101	131	0	17	3203
4:15 pm	5:15 pm	42	1445	0	0	0	0	0	1531	99	141	0	22	3280
4:30 pm	5:30 pm	39	1319	0	0	0	0	0	1373	89	122	0	20	2962
4:45 pm	5:45 pm	37	1273	0	0	0	0	0	1248	82	128	0	21	2789
5:00 pm	6:00 pm	33	1236	0	0	0	0	0	1172	73	117	0	20	2651
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		40	1474	0	0	0	0	0	1536	92	126	0	20	3288
Per Cent of Approach		3%	97%	0%	0%	0%	0%	0%	94%	6%	86%	0%	14%	
Peak Hour Factor:		0.77	0.96	0	0	0	0	0	0.9	0.85	0.79	0	0.83	0.92

Total Arrivals	1514	0	1628	146
Total Departures	1556	0	1600	132
Total	3070	0	3228	278

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kaonoulu Street
DAY & DATE: Saturday, May 18, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	11	231						245	12	33		12	544
2	10:15 am	11	187						212	33	22		24	489
3	10:30 am	10	260						288	12	25		6	601
4	10:45 am	8	250						250	21	22		7	558
5	11:00 am	9	198						233	14	27		3	484
6	11:15 am	5	240						242	11	19		15	532
7	11:30 am	14	271						235	15	34		3	572
8	11:45 am	5	202						255	17	20		4	503
9	12:00 pm	12	269						224	17	18		8	548
10	12:15 pm	13	267						272	18	31		12	613
11	12:30 pm	12	286						230	24	24		8	584
12	12:45 pm	6	272						221	15	28		9	551
13	1:00 pm	8	237						228	19	24		8	524
14	1:15 pm	6	240						268	13	21		11	559
15	1:30 pm	15	283						265	16	29		11	619
16	1:45 pm	12	230						227	9	22		6	506
	Maximum:	13	286						272	24	31		12	613

Hourly Volume of Each Movement

10:00 am	11:00 am	40	928	0	0	0	0	0	995	78	102	0	49	2192
10:15 am	11:15 am	38	895	0	0	0	0	0	983	80	96	0	40	2132
10:30 am	11:30 am	32	948	0	0	0	0	0	1013	58	93	0	31	2175
10:45 am	11:45 am	36	959	0	0	0	0	0	960	61	102	0	28	2146
11:00 am	12:00 pm	33	911	0	0	0	0	0	965	57	100	0	25	2091
11:15 am	12:15 pm	36	982	0	0	0	0	0	956	60	91	0	30	2155
11:30 am	12:30 pm	44	1009	0	0	0	0	0	986	67	103	0	27	2236
11:45 am	12:45 pm	42	1024	0	0	0	0	0	981	76	93	0	32	2248
12:00 pm	1:00 pm	43	1094	0	0	0	0	0	947	74	101	0	37	2296
12:15 pm	1:15 pm	39	1062	0	0	0	0	0	951	76	107	0	37	2272
12:30 pm	1:30 pm	32	1035	0	0	0	0	0	947	71	97	0	36	2218
12:45 pm	1:45 pm	35	1032	0	0	0	0	0	982	63	102	0	39	2253
1:00 pm	2:00 pm	41	990	0	0	0	0	0	988	57	96	0	36	2208
Peak Hour Volume		43	1094	0	0	0	0	0	947	74	101	0	37	2296
Per Cent of Approach		4%	96%	0%	0%	0%	0%	0%	93%	7%	73%	0%	27%	
Peak Hour Factor:		0.83	0.96	0	0	0	0	0	0.87	0.77	0.81	0	0.77	0.94

Total Arrivals	1137	0	1021	138
Total Departures	984	0	1195	117
Total	2121	0	2216	255

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: South Kihei Road at Kaonoulu Street
DAY & DATE: Thursday, May 16, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am		32	0	7		6	4	59					108
2	6:15 am		40	1	8		5	5	74					133
3	6:30 am		77	4	5		9	7	124					226
4	6:45 am		69	5	12		10	6	105					207
5	7:00 am		59	4	8		14	8	108					201
6	7:15 am		93	3	6		22	16	158					298
7	7:30 am		80	1	9		18	14	99					221
8	7:45 am		87	4	4		17	13	142					267
9	8:00 am		99	0	9		11	16	96					231
10	8:15 am		93	5	6		8	19	106					237
11	8:30 am		82	3	4		12	15	116					232
12	8:45 am		66	2	6		11	18	88					191
13	9:00 am													0
14	9:15 am													0
	Maximum:		99	4	9		22	16	158					298

Hourly Volume of Each Movement

6:00 am	7:00 am	0	218	10	32	0	30	22	362	0	0	0	0	674
6:15 am	7:15 am	0	245	14	33	0	38	26	411	0	0	0	0	767
6:30 am	7:30 am	0	298	16	31	0	55	37	495	0	0	0	0	932
6:45 am	7:45 am	0	301	13	35	0	64	44	470	0	0	0	0	927
7:00 am	8:00 am	0	319	12	27	0	71	51	507	0	0	0	0	987
7:15 am	8:15 am	0	359	8	28	0	68	59	495	0	0	0	0	1017
7:30 am	8:30 am	0	359	10	28	0	54	62	443	0	0	0	0	956
7:45 am	8:45 am	0	361	12	23	0	48	63	460	0	0	0	0	967
8:00 am	9:00 am	0	340	10	25	0	42	68	406	0	0	0	0	891
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		0	359	8	28	0	68	59	495	0	0	0	0	1017
Per Cent of Approach		0%	98%	2%	29%	0%	71%	11%	89%	0%	0%	0%	0%	
Peak Hour Factor:		0	0.91	0.5	0.78	0	0.77	0.92	0.78	0	0	0	0	0.85
Total Arrivals			367			96			554			0		
Total Departures			523			67			427			0		
Total			890			163			981			0		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: South Kihei Road at Kaonoulu Street
DAY & DATE: Thursday, May 16, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm		145	8	10		10	19	133					325
2	3:15 pm		116	3	4		13	23	127					286
3	3:30 pm		109	9	4		14	33	115					284
4	3:45 pm		131	8	8		9	32	140					328
5	4:00 pm		103	4	11		21	24	125					288
6	4:15 pm		135	7	5		21	23	119					310
7	4:30 pm		82	9	7		11	31	138					278
8	4:45 pm		148	10	7		9	31	127					332
9	5:00 pm		118	17	4		15	33	110					297
10	5:15 pm		149	10	6		14	30	126					335
11	5:30 pm		130	5	5		13	21	90					264
12	5:45 pm		98	2	7		11	22	104					244
13	6:00 pm													0
14	6:15 pm													0
	Maximum:		149	17	7		15	33	138					335

Hourly Volume of Each Movement

3:00 pm	4:00 pm	0	501	28	26	0	46	107	515	0	0	0	0	1223
3:15 pm	4:15 pm	0	459	24	27	0	57	112	507	0	0	0	0	1186
3:30 pm	4:30 pm	0	478	28	28	0	65	112	499	0	0	0	0	1210
3:45 pm	4:45 pm	0	451	28	31	0	62	110	522	0	0	0	0	1204
4:00 pm	5:00 pm	0	468	30	30	0	62	109	509	0	0	0	0	1208
4:15 pm	5:15 pm	0	483	43	23	0	56	118	494	0	0	0	0	1217
4:30 pm	5:30 pm	0	497	46	24	0	49	125	501	0	0	0	0	1242
4:45 pm	5:45 pm	0	545	42	22	0	51	115	453	0	0	0	0	1228
5:00 pm	6:00 pm	0	495	34	22	0	53	106	430	0	0	0	0	1140
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		0	497	46	24	0	49	125	501	0	0	0	0	1242
Per Cent of Approach		0%	92%	8%	33%	0%	67%	20%	80%	0%	0%	0%	0%	
Peak Hour Factor:		0	0.83	0.68	0.86	0	0.82	0.95	0.91	0	0	0	0	0.93
Total Arrivals			543			73			626			0		
Total Departures			525			171			546			0		
Total			1068			244			1172			0		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: South Kihei Road at Kaonoulu Street
DAY & DATE: Saturday, May 11, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am		80	4	3		15	26	141					269
2	10:15 am		71	2	3		15	30	121					242
3	10:30 am		71	0	3		7	22	131					234
4	10:45 am		94	1	9		13	21	111					249
5	11:00 am		91	5	2		18	23	122					261
6	11:15 am		95	4	4		11	25	128					267
7	11:30 am		110	5	5		11	20	114					265
8	11:45 am		115	3	3		25	24	124					294
9	12:00 pm		108	4	5		16	20	114					267
10	12:15 pm		107	3	1		26	22	137					296
11	12:30 pm		115	2	2		10	15	114					258
12	12:45 pm		115	7	10		20	33	96					281
13	1:00 pm		107	6	5		13	31	98					260
14	1:15 pm		102	2	1		17	25	132					279
15	1:30 pm		108	2	3		5	24	114					256
16	1:45 pm		117	6	3		13	15	122					276
	Maximum:		115	5	5		26	24	137					296

Hourly Volume of Each Movement

10:00 am	11:00 am	0	316	7	18	0	50	99	504	0	0	0	0	994
10:15 am	11:15 am	0	327	8	17	0	53	96	485	0	0	0	0	986
10:30 am	11:30 am	0	351	10	18	0	49	91	492	0	0	0	0	1011
10:45 am	11:45 am	0	390	15	20	0	53	89	475	0	0	0	0	1042
11:00 am	12:00 pm	0	411	17	14	0	65	92	488	0	0	0	0	1087
11:15 am	12:15 pm	0	428	16	17	0	63	89	480	0	0	0	0	1093
11:30 am	12:30 pm	0	440	15	14	0	78	86	489	0	0	0	0	1122
11:45 am	12:45 pm	0	445	12	11	0	77	81	489	0	0	0	0	1115
12:00 pm	1:00 pm	0	445	16	18	0	72	90	461	0	0	0	0	1102
12:15 pm	1:15 pm	0	444	18	18	0	69	101	445	0	0	0	0	1095
12:30 pm	1:30 pm	0	439	17	18	0	60	104	440	0	0	0	0	1078
12:45 pm	1:45 pm	0	432	17	19	0	55	113	440	0	0	0	0	1076
1:00 pm	2:00 pm	0	434	16	12	0	48	95	466	0	0	0	0	1071
Peak Hour Volume		0	440	15	14	0	78	86	489	0	0	0	0	1122
Per Cent of Approach		0%	97%	3%	15%	0%	85%	15%	85%	0%	0%	0%	0%	
Peak Hour Factor:		0	0.96	0.75	0.7	0	0.75	0.9	0.89	0	0	0	0	0.95

Total Arrivals	455	92	575	0
Total Departures	503	101	518	0
Total	958	193	1093	0

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kulanihakoi Street
DAY & DATE: Tuesday, May 14, 2013
START TIME: 6:00 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:00 am	1	189						104	0	11		6	311
2	6:15 am	0	251						167	3	13		9	443
3	6:30 am	5	265						184	4	20		19	497
4	6:45 am	10	303						216	2	18		10	559
5	7:00 am	6	420						316	6	28		17	793
6	7:15 am	6	511						366	5	28		11	927
7	7:30 am	10	480						302	2	31		13	838
8	7:45 am	14	415						313	18	37		8	805
9	8:00 am	17	362						235	21	41		11	687
10	8:15 am	15	398						266	7	32		14	732
11	8:30 am	7	282						270	9	25		9	602
12	8:45 am	8	309						250	12	23		9	611
13	9:00 am													0
14	9:15 am													0
	Maximum:	14	511						366	18	37		17	927

Hourly Volume of Each Movement

6:00 am	7:00 am	16	1008	0	0	0	0	0	671	9	62	0	44	1810
6:15 am	7:15 am	21	1239	0	0	0	0	0	883	15	79	0	55	2292
6:30 am	7:30 am	27	1499	0	0	0	0	0	1082	17	94	0	57	2776
6:45 am	7:45 am	32	1714	0	0	0	0	0	1200	15	105	0	51	3117
7:00 am	8:00 am	36	1826	0	0	0	0	0	1297	31	124	0	49	3363
7:15 am	8:15 am	47	1768	0	0	0	0	0	1216	46	137	0	43	3257
7:30 am	8:30 am	56	1655	0	0	0	0	0	1116	48	141	0	46	3062
7:45 am	8:45 am	53	1457	0	0	0	0	0	1084	55	135	0	42	2826
8:00 am	9:00 am	47	1351	0	0	0	0	0	1021	49	121	0	43	2632
8:15 am	9:15 am													
8:30 am	9:30 am													
Peak Hour Volume		36	1826	0	0	0	0	0	1297	31	124	0	49	3363
Per Cent of Approach		2%	98%	0%	0%	0%	0%	0%	98%	2%	72%	0%	28%	
Peak Hour Factor:		0.64	0.89	0	0	0	0	0	0.89	0.43	0.84	0	0.72	0.91
Total Arrivals			1862			0			1328			173		
Total Departures			1346			0			1950			67		
Total			3208			0			3278			240		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kulanihakoi Street
DAY & DATE: Tuesday, May 14, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach				South Approach			West Approach		
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	17	284						339	20	27		11	698
2	3:15 pm	14	330						346	16	19		10	735
3	3:30 pm	21	366						397	15	25		4	828
4	3:45 pm	17	366						398	19	26		7	833
5	4:00 pm	25	426						413	23	28		14	929
6	4:15 pm	14	352						480	17	10		6	879
7	4:30 pm	25	364						395	21	26		14	845
8	4:45 pm	20	373						368	13	28		7	809
9	5:00 pm	28	420						413	21	31		9	922
10	5:15 pm	18	293						278	14	19		4	626
11	5:30 pm	22	354						322	11	17		7	733
12	5:45 pm	17	300						259	17	17		12	622
13	6:00 pm													0
14	6:15 pm													0
	Maximum:	25	426						480	23	28		14	929

Hourly Volume of Each Movement

3:00 pm	4:00 pm	69	1346	0	0	0	0	0	1480	70	97	0	32	3094
3:15 pm	4:15 pm	77	1488	0	0	0	0	0	1554	73	98	0	35	3325
3:30 pm	4:30 pm	77	1510	0	0	0	0	0	1688	74	89	0	31	3469
3:45 pm	4:45 pm	81	1508	0	0	0	0	0	1686	80	90	0	41	3486
4:00 pm	5:00 pm	84	1515	0	0	0	0	0	1656	74	92	0	41	3462
4:15 pm	5:15 pm	87	1509	0	0	0	0	0	1656	72	95	0	36	3455
4:30 pm	5:30 pm	91	1450	0	0	0	0	0	1454	69	104	0	34	3202
4:45 pm	5:45 pm	88	1440	0	0	0	0	0	1381	59	95	0	27	3090
5:00 pm	6:00 pm	85	1367	0	0	0	0	0	1272	63	84	0	32	2903
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		81	1508	0	0	0	0	0	1686	80	90	0	41	3486
Per Cent of Approach		5%	95%	0%	0%	0%	0%	0%	95%	5%	69%	0%	31%	
Peak Hour Factor:		0.81	0.88	0	0	0	0	0	0.88	0.87	0.8	0	0.73	0.94
Total Arrivals			1589			0			1766			131		
Total Departures			1727			0			1598			161		
Total			3316			0			3364			292		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Kulanihakoi Street
DAY & DATE: Saturday, May 18, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	6	263						275	9	15		17	585
2	10:15 am	8	221						220	8	22		12	491
3	10:30 am	22	280						305	10	22		5	644
4	10:45 am	16	240						270	7	19		10	562
5	11:00 am	17	264						244	9	12		14	560
6	11:15 am	11	239						255	9	28		15	557
7	11:30 am	5	310						249	11	16		15	606
8	11:45 am	7	232						224	15	10		9	497
9	12:00 pm	12	210						201	8	6		11	448
10	12:15 pm	15	370						331	18	13		11	758
11	12:30 pm	18	270						212	7	9		12	528
12	12:45 pm	15	210						155	11	12		11	414
13	1:00 pm	17	239						221	13	18		21	529
14	1:15 pm	14	241						230	13	16		9	523
15	1:30 pm	16	275						258	9	16		22	596
16	1:45 pm	12	265						232	14	21		13	557
	Maximum:	22	280						305	10	28			15

Hourly Volume of Each Movement

10:00 am	11:00 am	52	1004	0	0	0	0	0	1070	34	78	0	44	2282
10:15 am	11:15 am	63	1005	0	0	0	0	0	1039	34	75	0	41	2257
10:30 am	11:30 am	66	1023	0	0	0	0	0	1074	35	81	0	44	2323
10:45 am	11:45 am	49	1053	0	0	0	0	0	1018	36	75	0	54	2285
11:00 am	12:00 pm	40	1045	0	0	0	0	0	972	44	66	0	53	2220
11:15 am	12:15 pm	35	991	0	0	0	0	0	929	43	60	0	50	2108
11:30 am	12:30 pm	39	1122	0	0	0	0	0	1005	52	45	0	46	2309
11:45 am	12:45 pm	52	1082	0	0	0	0	0	968	48	38	0	43	2231
12:00 pm	1:00 pm	60	1060	0	0	0	0	0	899	44	40	0	45	2148
12:15 pm	1:15 pm	65	1089	0	0	0	0	0	919	49	52	0	55	2229
12:30 pm	1:30 pm	64	960	0	0	0	0	0	818	44	55	0	53	1994
12:45 pm	1:45 pm	62	965	0	0	0	0	0	864	46	62	0	63	2062
1:00 pm	2:00 pm	59	1020	0	0	0	0	0	941	49	71	0	65	2205
Peak Hour Volume		66	1023	0	0	0	0	0	1074	35	81	0	44	2323
Per Cent of Approach		6%	94%	0%	0%	0%	0%	0%	97%	3%	65%	0%	35%	
Peak Hour Factor:		0.75	0.91	0	0	0	0	0	0.88	0.88	0.72	0	0.73	??
Total Arrivals			1089			0			1109			125		
Total Departures			1118			0			1104			101		
Total			2207			0			2213			226		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Kenolio Road
DAY & DATE: Friday, May 17, 2013
START TIME: 6:30 am
END TIME: 8:30 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:30 am	4	0	27	6	0	0	2	0	0	1	8	7	55
2	6:45 am	3	0	27	8	1	3	4	1	0	0	10	1	58
3	7:00 am	6	1	27	9	1	3	3	0	1	0	12	3	66
4	7:15 am	2	0	47	7	5	0	16	0	0	2	18	2	99
5	7:30 am	3	0	46	17	8	3	15	1	0	0	10	9	112
6	7:45 am	4	1	30	20	4	5	2	0	0	0	11	6	83
7	8:00 am	5	0	29	8	9	1	4	0	0	0	10	6	72
8	8:15 am	3	0	23	5	2	3	2	1	0	0	11	3	53
9	8:30 am													0
10	8:45 am													0
	Maximum:	5	1	47	20	9	5	16	1	0	2	18	9	112

Hourly Volume of Each Movement

6:30 am	7:30 am	15	1	128	30	7	6	25	1	1	3	48	13	278
6:45 am	7:45 am	14	1	147	41	15	9	38	2	1	2	50	15	335
7:00 am	8:00 am	15	2	150	53	18	11	36	1	1	2	51	20	360
7:15 am	8:15 am	14	1	152	52	26	9	37	1	0	2	49	23	366
7:30 am	8:30 am	15	1	128	50	23	12	23	2	0	0	42	24	320
7:45 am	8:45 am	12	1	82	33	15	9	8	1	0	0	32	15	208
8:00 am	9:00 am	8	0	52	13	11	4	6	1	0	0	21	9	125
Maximum Volume		14	1	152	52	26	9	37	1	0	2	49	23	366
Per Cent of Approach		8%	1%	91%	60%	30%	10%	97%	3%	0%	3%	66%	31%	
Peak Hour Factor:		0.7	0.25	0.81	0.65	0.72	0.45	0.58	0.25	0	0.25	0.68	0.64	0.82
Total Arrivals			167			87			38			74		
Total Departures			76			238			12			40		
Total			243			325			50			114		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Kenolio Road
DAY & DATE: Friday, May 17, 2013
START TIME: 3:30 pm
END TIME: 5:30 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:30 pm	5	2	26	18	8	2	6	0	1	1	13	8	90
2	3:45 pm	3	1	27	19	12	6	7	1			8	5	89
3	4:00 pm	5	0	20	22	14	5	1	0			5	7	79
4	4:15 pm	1	3	31	19	12	3	4	2			10	12	97
5	4:30 pm	5	0	22	13	12	1	6	2		1	8	13	83
6	4:45 pm	3	2	23	19	7	2	6	1		1	36	5	105
7	5:00 pm	1	0	17	17	6	5	3	1		1	11	8	70
8	5:15 pm	4	0	15	9	7	2	0	0	1	0	9	13	60
9	5:30 pm													0
10	5:45 pm													0
11	6:00 pm													0
12	6:15 pm													0
	Maximum:	5	3	31	22	14	5	6	2		1	36	13	105

Hourly Volume of Each Movement

3:30 pm	4:30 pm	14	6	104	78	46	16	18	3	1	1	36	32	355
3:45 pm	4:45 pm	14	4	100	73	50	15	18	5	0	1	31	37	348
4:00 pm	5:00 pm	14	5	96	73	45	11	17	5	0	2	59	37	364
4:15 pm	5:15 pm	10	5	93	68	37	11	19	6	0	3	65	38	355
4:30 pm	5:30 pm	13	2	77	58	32	10	15	4	1	3	64	39	318
4:45 pm	5:45 pm	8	2	55	45	20	9	9	2	1	2	56	26	235
5:00 pm	6:00 pm	5	0	32	26	13	7	3	1	1	1	20	21	130
5:15 pm	6:15 pm	4	0	15	9	7	2	0	0	1	0	9	13	60
5:30 pm	6:30 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Volume		14	5	96	73	45	11	17	5	0	2	59	37	364
Per Cent of Approach		12%	4%	83%	57%	35%	9%	77%	23%	0%	2%	60%	38%	1
Peak Hour Factor:		0.7	0.42	0.77	0.83	0.8	0.55	0.71	0.63	0	0.5	0.41	0.71	0.87
Total Arrivals			115			129			22			98		
Total Departures			115			172			18			59		
Total			230			301			40			157		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Kenolio Road
DAY & DATE: Saturday
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	1	0	23	12	5	3	3	2		1	10	3	63
2	10:15 am	6	1	20	11	2	2	4	3		0	11	8	68
3	10:30 am	7	0	26	9	9	3	4	0		0	8	7	73
4	10:45 am	3	1	17	20	6	0	0	1		1	14	6	69
5	11:00 am	3	0	18	7	4	0	3	1		0	13	5	54
6	11:15 am	3	0	17	13	2	1	5	1		0	14	10	66
7	11:30 am	3	0	19	9	5	3	4	2		1	5	7	58
8	11:45 am	3	1	17	9	6	3	4	1		0	11	8	63
9	12:00 pm	6	0	20	15	6	3	1	2		0	5	9	67
10	12:15 pm	4	1	17	7	2	1	1	1		0	7	4	45
11	12:30 pm	4	0	12	9	1	2	7	2	1	0	5	11	54
12	12:45 pm	5	1	12	5	4	5	0	2		1	5	4	44
13	1:00 pm	0	1	16	7	4	3	4	1		0	7	5	48
14	1:15 pm	3	0	9	12	8	3	3	0		0	10	8	56
15	1:30 pm	2	1	15	9	8	1	3	0		1	13	1	54
16	1:45 pm	1	1	12	6	11	2	0	0	1	0	10	7	51
	Maximum:	7	1	26	20	9	3	4	3		1	14	8	73

Hourly Volume of Each Movement

10:00 am	11:00 am	17	2	86	52	22	8	11	6	0	2	43	24	273
10:15 am	11:15 am	19	2	81	47	21	5	11	5	0	1	46	26	264
10:30 am	11:30 am	16	1	78	49	21	4	12	3	0	1	49	28	262
10:45 am	11:45 am	12	1	71	49	17	4	12	5	0	2	46	28	247
11:00 am	12:00 pm	12	1	71	38	17	7	16	5	0	1	43	30	241
11:15 am	12:15 pm	15	1	73	46	19	10	14	6	0	1	35	34	254
11:30 am	12:30 pm	16	2	73	40	19	10	10	6	0	1	28	28	233
11:45 am	12:45 pm	17	2	66	40	15	9	13	6	1	0	28	32	229
12:00 pm	1:00 pm	19	2	61	36	13	11	9	7	1	1	22	28	210
12:15 pm	1:15 pm	13	3	57	28	11	11	12	6	1	1	24	24	191
12:30 pm	1:30 pm	12	2	49	33	17	13	14	5	1	1	27	28	202
12:45 pm	1:45 pm	10	3	52	33	24	12	10	3	0	2	35	18	202
1:00 pm	2:00 pm	6	3	52	34	31	9	10	1	1	1	40	21	209
Peak Hour Volume		17	2	86	52	22	8	11	6	0	2	43	24	273
Per Cent of Approach		16%	2%	82%	63%	27%	10%	65%	35%	0%	3%	62%	35%	
Peak Hour Factor:		0.61	0.5	0.83	0.65	0.61	0.67	0.69	0.5	0	0.5	0.77	0.75	0.93

Total Arrivals	105	82	17	69
Total Departures	82	140	12	39
Total	187	222	29	108

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Alulike Street
DAY & DATE: Thursday, February 25, 2010
START TIME: 6:30 am
END TIME: 9:00 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:30 am	6	0	2	0	9	0	1	0	4	1	13	1	37
2	6:45 am	9	1	0	0	6	0	0	1	2	1	10	5	35
3	7:00 am	7	0	0	1	10	1	2	0	2	1	9	3	36
4	7:15 am	9	0	1	1	11	2	0	0	3	2	13	2	44
5	7:30 am	6	0	1	1	14	0	1	0	2	4	17	1	47
6	7:45 am	9	0	0	0	12	0	0	0	2	4	18	9	54
7	8:00 am	9	0	1	0	14	2	1	0	2	3	18	5	55
8	8:15 am	7	0	0	1	6	0	2	1	4	0	13	6	40
9	8:30 am	8	0	1	0	4	2	1	1	1	5	12	4	39
10	8:45 am	11	0	0	1	12	1	0	1	3	0	18	3	50
	Maximum:	9	0	1	1	14	2	1	0	3	4	18	9	55

Hourly Volume of Each Movement

6:30 am	7:30 am	31	1	3	2	36	3	3	1	11	5	45	11	152
6:45 am	7:45 am	31	1	2	3	41	3	3	1	9	8	49	11	162
7:00 am	8:00 am	31	0	2	3	47	3	3	0	9	11	57	15	181
7:15 am	8:15 am	33	0	3	2	51	4	2	0	9	13	66	17	200
7:30 am	8:30 am	31	0	2	2	46	2	4	1	10	11	66	21	196
7:45 am	8:45 am	33	0	2	1	36	4	4	2	9	12	61	24	188
8:00 am	9:00 am	35	0	2	2	36	5	4	3	10	8	61	18	184
Maximum Volume		33	0	3	2	51	4	2	0	9	13	66	17	200
Per Cent of Approach		92%	0%	8%	4%	89%	7%	18%	0%	82%	14%	69%	18%	
Peak Hour Factor:		0.92	0	0.75	0.5	0.91	0.5	0.5	0	0.75	0.81	0.92	0.47	0.91
Total Arrivals			36			57			11			96		
Total Departures			19			71			17			93		
Total			55			128			28			189		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Alulike Street
DAY & DATE: Thursday, February 25
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	9	0	1	0	14	1	0	2	5	1	22	13	68
2	3:15 pm	8	1	0	1	13	1	0	0	4	6	15	7	56
3	3:30 pm	6	0	0	0	11	3	0	0	2	3	14	6	45
4	3:45 pm	11	0	0	1	6	1	2	0	2	2	11	12	48
5	4:00 pm	7	0	0	0	21	1	0	0	0	7	16	14	66
6	4:15 pm	11	0	1	1	15	0	0	1	2	2	24	17	74
7	4:30 pm	5	1	1	4	8	0	0	0	1	5	22	15	62
8	4:45 pm	7	0	1	1	12	1	2	0	0	2	29	15	70
9	5:00 pm	8	1	1	0	13	0	0	0	3	1	16	16	59
10	5:15 pm	7	0	0	0	6	0	0	0	2	7	15	13	50
11	5:30 pm	8	0	0	1	4	0	1	0	1	6	15	11	47
12	5:45 pm	11	0	0	3	13	2	1	0	2	2	19	12	65
	Maximum:	11	1	1	4	21	1	2	1	2	7	29	17	74

Hourly Volume of Each Movement

3:00 pm	4:00 pm	34	1	1	2	44	6	2	2	13	12	62	38	217
3:15 pm	4:15 pm	32	1	0	2	51	6	2	0	8	18	56	39	215
3:30 pm	4:30 pm	35	0	1	2	53	5	2	1	6	14	65	49	233
3:45 pm	4:45 pm	34	1	2	6	50	2	2	1	5	16	73	58	250
4:00 pm	5:00 pm	30	1	3	6	56	2	2	1	3	16	91	61	272
4:15 pm	5:15 pm	31	2	4	6	48	1	2	1	6	10	91	63	265
4:30 pm	5:30 pm	27	2	3	5	39	1	2	0	6	15	82	59	241
4:45 pm	5:45 pm	30	1	2	2	35	1	3	0	6	16	75	55	226
5:00 pm	6:00 pm	34	1	1	4	36	2	2	0	8	16	65	52	221
Maximum Volume		30	1	3	6	56	2	2	1	3	16	91	61	272
Per Cent of Approach		88%	3%	9%	9%	88%	3%	33%	17%	50%	10%	54%	36%	1
Peak Hour Factor:		0.68	0.25	0.75	0.38	0.67	0.5	0.25	0.25	0.38	0.57	0.78	0.9	0.92
Total Arrivals			34			64			6			168		
Total Departures			68			96			19			89		
Total			102			160			25			257		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Kaonoulu Street at Alulike Street
DAY & DATE: Saturday
START TIME: 10:00 am
END TIME: 2:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	14	1	0	5	8	0	3	0	2	2	24	9	68
2	10:15 am	17	2	0	4	4	0	2	0	0	2	14	10	55
3	10:30 am	5	0	1	1	12	0	0	0	2	2	8	13	44
4	10:45 am	12	0	0	1	13	0	0	1	0	3	19	12	61
5	11:00 am	7	1	1	2	8	2	2	3	0	4	23	11	64
6	11:15 am	10	0	1	1	10	0	1	1	2	1	23	8	58
7	11:30 am	10	1	3	0	9	0	3	0	1	1	13	14	55
8	11:45 am	16	1	2	5	10	4	1	0	2	4	12	12	69
9	12:00 pm	10	0	1	1	12	0	2	0	1	3	15	11	56
10	12:15 pm	5	0	1	2	12	0	0	0	1	2	22	13	58
11	12:30 pm	6	1	1	1	7	1	1	0	1	0	22	12	53
12	12:45 pm	7	1	3	3	8	0	0	0	2	3	20	7	54
13	1:00 pm	14	0	7	2	11	2	0	0	2	2	22	16	78
14	1:15 pm	12	0	0	1	6	0	0	1	2	3	20	7	52
15	1:30 pm	5	1	3	0	5	1	1	1	1	3	10	11	42
16	1:45 pm	4	0	0	1	12	1	1	0	2	7	18	10	56
	Maximum:	16	1	3	5	10	4	3	3	2	4	23	14	69

Hourly Volume of Each Movement

10:00 am	11:00 am	48	3	1	11	37	0	5	1	4	9	65	44	228
10:15 am	11:15 am	41	3	2	8	37	2	4	4	2	11	64	46	224
10:30 am	11:30 am	34	1	3	5	43	2	3	5	4	10	73	44	227
10:45 am	11:45 am	39	2	5	4	40	2	6	5	3	9	78	45	238
11:00 am	12:00 pm	43	3	7	8	37	6	7	4	5	10	71	45	246
11:15 am	12:15 pm	46	2	7	7	41	4	7	1	6	9	63	45	238
11:30 am	12:30 pm	41	2	7	8	43	4	6	0	5	10	62	50	238
11:45 am	12:45 pm	37	2	5	9	41	5	4	0	5	9	71	48	236
12:00 pm	1:00 pm	28	2	6	7	39	1	3	0	5	8	79	43	221
12:15 pm	1:15 pm	32	2	12	8	38	3	1	0	6	7	86	48	243
12:30 pm	1:30 pm	39	2	11	7	32	3	1	1	7	8	84	42	237
12:45 pm	1:45 pm	38	2	13	6	30	3	1	2	7	11	72	41	226
1:00 pm	2:00 pm	35	1	10	4	34	4	2	2	7	15	70	44	228
Peak Hour Volume		43	3	7	8	37	6	7	4	5	10	71	45	246
Per Cent of Approach		81%	6%	13%	16%	73%	12%	44%	25%	31%	8%	56%	36%	
Peak Hour Factor:		0.67	0.75	0.58	0.4	0.93	0.38	0.58	0.33	0.63	0.63	0.77	0.8	0.89

Total Arrivals	53	51	16	126
Total Departures	57	85	19	85
Total	110	136	35	211

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Piikea Avenue
DAY & DATE: Tuesday, October 15, 2013
START TIME: 6:30 am
END TIME: 8:30 am

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	6:30 am	55	272						186	10	39		42	604
2	6:45 am	58	211						162	22	33		43	529
3	7:00 am	75	326						273	23	40		58	795
4	7:15 am	94	345						282	25	46		53	845
5	7:30 am	105	487						237	23	41		78	971
6	7:45 am	84	321						216	30	53		71	775
7	8:00 am	81	336						220	38	43		64	782
8	8:15 am	74	322						259	62	58		47	822
9														
10														
	Maximum:	105	487						282	30	53		78	971

Hourly Volume of Each Movement

6:30 am	7:30 am	282	1154	0	0	0	0	0	903	80	158	0	196	2773
6:45 am	7:45 am	332	1369	0	0	0	0	0	954	93	160	0	232	3140
7:00 am	8:00 am	358	1479	0	0	0	0	0	1008	101	180	0	260	3386
7:15 am	8:15 am	364	1489	0	0	0	0	0	955	116	183	0	266	3373
7:30 am	8:30 am	344	1466	0	0	0	0	0	932	153	195	0	260	3350
7:45 am	8:45 am	239	979	0	0	0	0	0	695	130	154	0	182	2379
8:00 am	9:00 am	155	658	0	0	0	0	0	479	100	101	0	111	1604
Maximum Volume		358	1479	0	0	0	0	0	1008	101	180	0	260	3386
Per Cent of Approach		19%	81%	0%	0%	0%	0%	0%	91%	9%	41%	0%	59%	
Peak Hour Factor:		0.85	0.76	0	0	0	0	0	0.89	0.84	0.85	0	0.83	0.87
Total Arrivals			1837			0			1109			440		
Total Departures			1268			0			1659			459		
Total			3105			0			2768			899		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Piikea Avenue
DAY & DATE: Tuesday, October 15, 2013
START TIME: 3:00 pm
END TIME: 6:00 pm

15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	3:00 pm	102	323						355	60	68		75	983
2	3:15 pm	88	264						305	59	48		56	820
3	3:30 pm	115	356						418	71	89		88	1137
4	3:45 pm	62	235						303	54	46		39	739
5	4:00 pm	93	294						355	50	59		76	927
6	4:15 pm	88	289						265	57	57		57	813
7	4:30 pm	91	299						325	54	51		66	886
8	4:45 pm	77	286						279	59	60		55	816
9	5:00 pm													0
10	5:15 pm													0
11	5:30 pm													0
12	5:45 pm													0
	Maximum:	115	356						418	71	89		88	1137

Hourly Volume of Each Movement

3:00 pm	4:00 pm	367	1178	0	0	0	0	0	1381	244	251	0	258	3679
3:15 pm	4:15 pm	358	1149	0	0	0	0	0	1381	234	242	0	259	3623
3:30 pm	4:30 pm	358	1174	0	0	0	0	0	1341	232	251	0	260	3616
3:45 pm	4:45 pm	334	1117	0	0	0	0	0	1248	215	213	0	238	3365
4:00 pm	5:00 pm	349	1168	0	0	0	0	0	1224	220	227	0	254	3442
4:15 pm	5:15 pm	256	874	0	0	0	0	0	869	170	168	0	178	2515
4:30 pm	5:30 pm	168	585	0	0	0	0	0	604	113	111	0	121	1702
4:45 pm	5:45 pm													
5:00 pm	6:00 pm													
Maximum Volume		367	1178	0	0	0	0	0	1381	244	251	0	258	3679
Per Cent of Approach		24%	76%	0%	0%	0%	0%	0%	85%	15%	49%	0%	51%	1
Peak Hour Factor:		0.8	0.83	0	0	0	0	0	0.83	0.86	0.71	0	0.73	0.81
Total Arrivals			1545			0			1625			509		
Total Departures			1639			0			1429			611		
Total			3184			0			3054			1120		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piilani Promenade 2013
INTERSECTION: Piilani Highway at Piikea Avenue
DAY & DATE: Saturday, November 23, 2013
START TIME: 10:00 am
END TIME: 2:00 pm

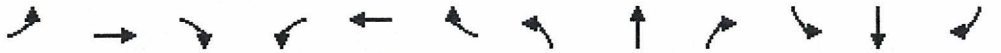
15-Minute Volumes Beginning at:

		North Approach			East Approach			South Approach			West Approach			
Interval	Start Time	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1	10:00 am	58	185						227	43	47		69	629
2	10:15 am	94	213						228	57	46		75	713
3	10:30 am	57	191						202	43	57		65	615
4	10:45 am	98	216						186	46	58		66	670
5	11:00 am	107	273						302	68	94		88	932
6	11:15 am	54	147						160	28	31		42	462
7	11:30 am	68	228						237	53	63		68	717
8	11:45 am	102	228						267	59	64		75	795
9	12:00 pm	73	206						237	54	54		78	702
10	12:15 pm	82	194						236	44	51		64	671
11	12:30 pm	93	253						228	48	62		75	759
12	12:45 pm	90	213						196	60	54		66	679
13	1:00 pm	80	239						220	50	81		65	735
14	1:15 pm	91	241						254	54	56		56	752
15	1:30 pm	69	267						228	44	65		69	742
16	1:45 pm	80	262						261	42	68		68	781
	Maximum:	107	273						302	68	94		88	932

Hourly Volume of Each Movement

10:00 am	11:00 am	307	805	0	0	0	0	0	843	189	208	0	275	2627
10:15 am	11:15 am	356	893	0	0	0	0	0	918	214	255	0	294	2930
10:30 am	11:30 am	316	827	0	0	0	0	0	850	185	240	0	261	2679
10:45 am	11:45 am	327	864	0	0	0	0	0	885	195	246	0	264	2781
11:00 am	12:00 pm	331	876	0	0	0	0	0	966	208	252	0	273	2906
11:15 am	12:15 pm	297	809	0	0	0	0	0	901	194	212	0	263	2676
11:30 am	12:30 pm	325	856	0	0	0	0	0	977	210	232	0	285	2885
11:45 am	12:45 pm	350	881	0	0	0	0	0	968	205	231	0	292	2927
12:00 pm	1:00 pm	338	866	0	0	0	0	0	897	206	221	0	283	2811
12:15 pm	1:15 pm	345	899	0	0	0	0	0	880	202	248	0	270	2844
12:30 pm	1:30 pm	354	946	0	0	0	0	0	898	212	253	0	262	2925
12:45 pm	1:45 pm	330	960	0	0	0	0	0	898	208	256	0	256	2908
1:00 pm	2:00 pm	320	1009	0	0	0	0	0	963	190	270	0	258	3010
Peak Hour Volume		356	893	0	0	0	0	0	918	214	255	0	294	2930
Per Cent of Approach		29%	71%	0%	0%	0%	0%	0%	81%	19%	46%	0%	54%	
Peak Hour Factor:		0.83	0.82	0	0	0	0	0	0.76	0.79	0.68	0	0.84	0.79
Total Arrivals			1249			0			1132			549		
Total Departures			1212			0			1148			570		
Total			2461			0			2280			1119		

Appendix B
Level-of-Service Worksheets for Existing Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1826	1583		1789	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1826	1583		1789	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	77	88	79	210	40	177	25	1011	40	167	1363	44
Peak-hour factor, PHF	0.84	0.65	0.62	0.81	0.71	0.87	0.69	0.76	0.83	0.82	0.78	0.69
Adj. Flow (vph)	92	135	127	259	56	203	36	1330	48	204	1747	64
RTOR Reduction (vph)	0	0	109	0	0	169	0	0	21	0	0	20
Lane Group Flow (vph)	0	227	18	0	315	34	36	1330	27	204	1747	44
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		16.6	16.6		20.0	20.0	6.0	53.6	53.6	14.8	62.4	62.4
Effective Green, g (s)		17.6	17.6		21.0	21.0	7.0	54.6	54.6	15.8	63.4	63.4
Actuated g/C Ratio		0.14	0.14		0.17	0.17	0.06	0.44	0.44	0.13	0.51	0.51
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	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		257	223		301	266	99	1546	691	224	1795	803
v/s Ratio Prot		c0.12			c0.18		0.02	0.38		c0.12	c0.49	
v/s Ratio Perm			0.08			0.13			0.03			0.04
v/c Ratio		0.88	0.08		1.05	0.13	0.36	0.86	0.04	0.91	0.97	0.06
Uniform Delay, d1		52.7	46.7		52.0	44.2	56.9	31.8	20.2	53.9	30.0	15.6
Progression Factor		1.00	1.00		1.00	1.00	1.06	0.80	0.64	1.22	0.74	0.16
Incremental Delay, d2		27.9	0.2		64.6	0.2	0.8	6.1	0.1	34.2	15.0	0.1
Delay (s)		80.6	46.8		116.6	44.4	61.1	31.7	13.0	100.0	37.3	2.6
Level of Service		F	D		F	D	E	C	B	F	D	A
Approach Delay (s)		68.5			88.3			31.8			42.5	
Approach LOS		E			F			C			D	

Intersection Summary			
HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1583		1802	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.60	1.00		0.50	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1112	1583		931	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	138	10	106	53	26	84	17	1227	46	29	1177	21
Peak-hour factor, PHF	0.80	0.54	0.60	0.70	0.72	0.84	0.85	0.86	0.77	0.60	0.87	0.88
Adj. Flow (vph)	172	19	177	76	36	100	20	1427	60	48	1353	24
RTOR Reduction (vph)	0	0	142	0	0	80	0	0	22	0	0	8
Lane Group Flow (vph)	0	191	35	0	112	20	20	1427	38	48	1353	16
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)		23.7	23.7		23.7	23.7	4.0	78.3	78.3	8.0	82.3	82.3
Effective Green, g (s)		24.7	24.7		24.7	24.7	5.0	79.3	79.3	9.0	83.3	83.3
Actuated g/C Ratio		0.20	0.20		0.20	0.20	0.04	0.63	0.63	0.07	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	5.0
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		220	313		184	313	71	2245	1004	127	2358	1055
v/s Ratio Prot							0.01	c0.40		c0.03	c0.38	
v/s Ratio Perm		c0.17	0.11		0.12	0.06			0.04			0.02
v/c Ratio		0.87	0.11		0.61	0.06	0.28	0.64	0.04	0.38	0.57	0.02
Uniform Delay, d1		48.6	41.1		45.7	40.7	58.3	14.0	8.6	55.3	11.3	7.0
Progression Factor		1.00	1.00		1.00	1.00	0.54	2.11	4.97	0.80	1.97	1.84
Incremental Delay, d2		29.1	0.2		6.5	0.1	0.4	0.8	0.0	0.6	0.9	0.0
Delay (s)		77.6	41.4		52.2	40.9	31.8	30.3	42.6	45.1	23.1	12.9
Level of Service		E	D		D	D	C	C	D	D	C	B
Approach Delay (s)		60.2			46.9			30.8			23.7	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1723	2787		1764		3433	3533		1770	3539	1583
Flt Permitted	0.95	0.97	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1723	2787		1764		3433	3533		1770	3539	1583
Volume (vph)	191	20	298	14	2	4	341	1097	8	3	993	110
Peak-hour factor, PHF	0.73	0.25	0.86	0.70	0.50	1.00	0.66	0.85	0.50	0.38	0.90	0.95
Adj. Flow (vph)	262	80	347	20	4	4	517	1291	16	8	1103	116
RTOR Reduction (vph)	0	0	113	0	4	0	0	1	0	0	0	54
Lane Group Flow (vph)	167	175	234	0	24	0	517	1306	0	8	1103	62
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	15.6	15.6	47.5		3.6		25.9	83.0		0.8	57.4	57.4
Effective Green, g (s)	17.6	17.6	48.0		5.6		26.4	85.0		0.8	59.4	59.4
Actuated g/C Ratio	0.14	0.14	0.38		0.04		0.21	0.68		0.01	0.48	0.48
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	237	243	1070		79		725	2402		11	1682	752
v/s Ratio Prot	0.10	c0.10			c0.02		c0.15	0.37		0.00	c0.31	
v/s Ratio Perm			0.12									0.07
v/c Ratio	0.70	0.72	0.22		0.31		0.71	0.54		0.73	0.66	0.08
Uniform Delay, d1	51.2	51.3	25.9		57.8		45.8	10.2		62.0	25.0	17.9
Progression Factor	1.21	1.21	1.03		1.00		0.84	1.82		1.00	1.00	1.00
Incremental Delay, d2	9.1	10.0	0.1		2.2		2.7	0.7		110.3	2.0	0.2
Delay (s)	70.8	72.0	26.7		60.0		41.2	19.2		172.3	27.0	18.1
Level of Service	E	E	C		E		D	B		F	C	B
Approach Delay (s)		48.9			60.0			25.4			27.1	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	282	182	81	398	390	165
Peak-hour factor, PHF	0.85	0.84	0.92	0.85	0.91	0.79
Adj. Flow (vph)	332	217	88	468	429	209
RTOR Reduction (vph)	0	75	0	0	0	0
Lane Group Flow (vph)	332	142	88	468	429	209
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	80.1	80.1	10.5	94.6	19.4	125.0
Effective Green, g (s)	81.6	81.6	10.5	96.1	20.9	125.0
Actuated g/C Ratio	0.65	0.65	0.08	0.77	0.17	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	1216	1033	149	2721	574	1583
v/s Ratio Prot	c0.18		c0.05	0.13	c0.12	
v/s Ratio Perm		0.14				0.13
v/c Ratio	0.27	0.14	0.59	0.17	0.75	0.13
Uniform Delay, d1	9.2	8.3	55.2	3.8	49.5	0.0
Progression Factor	1.00	1.00	0.97	0.31	1.00	1.00
Incremental Delay, d2	0.6	0.3	3.7	0.1	4.6	0.0
Delay (s)	9.7	8.6	57.3	1.3	54.2	0.0
Level of Service	A	A	E	A	D	A
Approach Delay (s)	9.3			10.2	36.4	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.12	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	217	3539	3539	1583
Volume (vph)	259	180	101	1008	1479	358
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	196	110	1096	1608	389
RTOR Reduction (vph)	0	48	0	0	0	96
Lane Group Flow (vph)	282	148	110	1096	1608	293
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	22.9	22.9	94.1	94.1	94.1	94.1
Effective Green, g (s)	22.9	22.9	94.1	94.1	94.1	94.1
Actuated g/C Ratio	0.18	0.18	0.75	0.75	0.75	0.75
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	324	290	163	2664	2664	1192
v/s Ratio Prot	c0.16			0.31	0.45	
v/s Ratio Perm		0.12	c0.51			0.25
v/c Ratio	0.87	0.51	0.67	0.41	0.60	0.25
Uniform Delay, d1	49.6	46.0	7.8	5.5	7.0	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.62	6.60
Incremental Delay, d2	21.6	1.4	20.1	0.5	0.7	0.3
Delay (s)	71.2	47.4	27.9	6.0	12.0	31.3
Level of Service	E	D	C	A	B	C
Approach Delay (s)	61.4			8.0	15.8	
Approach LOS	E			A	B	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	31	181	68	1122	1520	19
Peak Hour Factor	0.52	0.59	0.68	0.74	0.84	0.68
Hourly flow rate (vph)	60	307	100	1516	1810	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	3					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2768	905	1837			
vC1, stage 1 conf vol	1810					
vC2, stage 2 conf vol	958					
vCu, unblocked vol	2768	905	1837			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	45	0	69			
cM capacity (veh/h)	109	279	328			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	307	100	758	758	905	905	28
Volume Left	60	0	100	0	0	0	0	0
Volume Right	0	307	0	0	0	0	0	28
cSH	109	279	328	1700	1700	1700	1700	1700
Volume to Capacity	0.55	1.10	0.31	0.45	0.45	0.53	0.53	0.02
Queue Length 95th (ft)	64	314	32	0	0	0	0	0
Control Delay (s)	72.3	122.6	20.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	F	C					
Approach Delay (s)	114.4		1.3			0.0		
Approach LOS	F							

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	68	28	495	59	8	359
Peak Hour Factor	0.77	0.78	0.78	0.92	0.50	0.91
Hourly flow rate (vph)	88	36	635	64	16	395
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1093	667			699	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1093	667			699	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	92			98	
cM capacity (veh/h)	233	459			898	

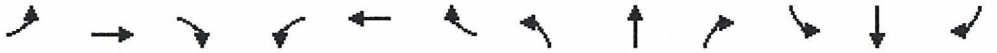
Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	88	36	699	411
Volume Left	88	0	0	16
Volume Right	0	36	64	0
cSH	233	459	1700	898
Volume to Capacity	0.38	0.08	0.41	0.02
Queue Length 95th (ft)	42	6	0	1
Control Delay (s)	29.6	13.5	0.0	0.6
Lane LOS	D	B		A
Approach Delay (s)	25.0		0.0	0.6
Approach LOS	C			

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	49	124	31	1297	1826	36
Peak Hour Factor	0.72	0.84	0.43	0.89	0.89	0.64
Hourly flow rate (vph)	68	148	72	1457	2052	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2925	1026	2108			
vC1, stage 1 conf vol	2052					
vC2, stage 2 conf vol	873					
vCu, unblocked vol	2925	1026	2108			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	13	36	72			
cM capacity (veh/h)	78	232	257			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	68	148	72	729	729	1026	1026	56
Volume Left	68	0	72	0	0	0	0	0
Volume Right	0	148	0	0	0	0	0	56
cSH	78	232	257	1700	1700	1700	1700	1700
Volume to Capacity	0.87	0.64	0.28	0.43	0.43	0.60	0.60	0.03
Queue Length 95th (ft)	111	96	28	0	0	0	0	0
Control Delay (s)	159.2	44.2	24.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	E	C					
Approach Delay (s)	80.5		1.2			0.0		
Approach LOS	F							

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	49	2	9	26	52	0	1	37	152	1	14
Peak Hour Factor	0.64	0.68	0.25	0.45	0.72	0.65	0.42	0.25	0.58	0.81	0.25	0.70
Hourly flow rate (vph)	36	72	8	20	36	80	0	4	64	188	4	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	116			80			246	304	76	326	268	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	116			80			246	304	76	326	268	76
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			100	99	94	67	99	98
cM capacity (veh/h)	1473			1518			670	586	985	567	614	985

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	36	80	20	116	0	68	188	24
Volume Left	36	0	20	0	0	0	188	0
Volume Right	0	8	0	80	0	64	0	20
cSH	1473	1700	1518	1700	1700	947	567	895
Volume to Capacity	0.02	0.05	0.01	0.07	0.00	0.07	0.33	0.03
Queue Length 95th (ft)	2	0	1	0	0	6	36	2
Control Delay (s)	7.5	0.0	7.4	0.0	0.0	9.1	14.5	9.1
Lane LOS	A		A		A	A	B	A
Approach Delay (s)	2.3		1.1		9.1		13.9	
Approach LOS					A		B	

Intersection Summary				
Average Delay	7.5			
Intersection Capacity Utilization	29.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
10: KAONOULU STREET & ALULIKE STREET 10/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	66	13	4	51	2	9	0	2	3	0	33
Peak Hour Factor	0.47	0.92	0.65	0.50	0.91	0.50	0.56	0.25	0.25	0.38	0.25	0.75
Hourly flow rate (vph)	36	72	20	8	56	4	16	0	8	8	0	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	60			92			270	230	82	226	238	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			92			270	230	82	226	238	58
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			97	100	99	99	100	96
cM capacity (veh/h)	1543			1503			638	651	978	707	644	1008

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	36	92	8	60	24	52
Volume Left	36	0	8	0	16	8
Volume Right	0	20	0	4	8	44
cSH	1543	1700	1503	1700	722	947
Volume to Capacity	0.02	0.05	0.01	0.04	0.03	0.05
Queue Length 95th (ft)	2	0	0	0	3	4
Control Delay (s)	7.4	0.0	7.4	0.0	10.2	9.0
Lane LOS	A		A		B	A
Approach Delay (s)	2.1		0.9		10.2	9.0
Approach LOS					B	A

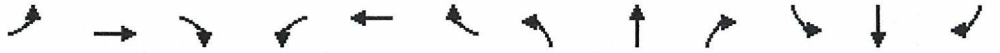
Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	17.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1816	1583		1797	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1816	1583		1797	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	88	76	81	204	66	168	104	1379	56	138	1272	56
Peak-hour factor, PHF	0.92	0.83	0.92	0.86	0.75	0.89	0.79	0.95	0.64	0.93	0.88	0.64
Adj. Flow (vph)	96	92	88	237	88	189	132	1452	88	148	1445	88
RTOR Reduction (vph)	0	0	79	0	0	151	0	0	27	0	0	26
Lane Group Flow (vph)	0	188	9	0	325	38	132	1452	61	148	1445	62
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		15.0	15.0		28.9	28.9	15.0	69.5	69.5	16.6	71.1	71.1
Effective Green, g (s)		16.0	16.0		29.9	29.9	16.0	70.5	70.5	17.6	72.1	72.1
Actuated g/C Ratio		0.11	0.11		0.20	0.20	0.11	0.47	0.47	0.12	0.48	0.48
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)		3.5	3.5		3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		194	169		358	316	189	1663	744	208	1701	761
v/s Ratio Prot		c0.10			c0.18		0.07	c0.41		c0.08	0.41	
v/s Ratio Perm			0.06			0.12			0.06			0.06
v/c Ratio		0.97	0.06		0.91	0.12	0.70	0.87	0.08	0.71	0.85	0.08
Uniform Delay, d1		66.8	60.2		58.7	49.3	64.7	35.7	21.9	63.8	34.2	21.0
Progression Factor		1.00	1.00		1.00	1.00	0.93	1.17	1.38	1.28	0.84	0.34
Incremental Delay, d2		55.2	0.2		25.7	0.2	7.6	5.9	0.2	8.3	5.0	0.2
Delay (s)		122.0	60.4		84.4	49.4	67.9	47.5	30.4	90.1	33.6	7.4
Level of Service		F	E		F	D	E	D	C	F	C	A
Approach Delay (s)		102.3			71.5			48.2			37.2	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM Average Control Delay	50.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1789	1583		1831	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.59	1.00		0.77	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1094	1583		1441	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	78	12	79	23	39	53	48	1424	94	80	1343	64
Peak-hour factor, PHF	0.85	0.60	0.79	0.72	0.65	0.83	0.86	0.93	0.87	0.83	0.96	0.80
Adj. Flow (vph)	92	20	100	32	60	64	56	1531	108	96	1399	80
RTOR Reduction (vph)	0	0	87	0	0	56	0	0	29	0	0	21
Lane Group Flow (vph)	0	112	13	0	92	8	56	1531	79	96	1399	59
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)		18.8	18.8		18.8	18.8	8.5	104.6	104.6	12.6	108.7	108.7
Effective Green, g (s)		18.8	18.8		18.8	18.8	9.5	105.6	105.6	13.6	109.7	109.7
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.06	0.70	0.70	0.09	0.73	0.73
Clearance Time (s)		4.0	4.0		4.0	4.0	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)		137	198		181	198	112	2491	1114	160	2588	1158
v/s Ratio Prot							0.03	c0.43		c0.05	0.40	
v/s Ratio Perm		c0.10	0.06		0.06	0.04			0.07			0.05
v/c Ratio		0.82	0.06		0.51	0.04	0.50	0.61	0.07	0.60	0.54	0.05
Uniform Delay, d1		63.9	57.8		61.3	57.7	68.0	11.6	6.9	65.6	9.0	5.6
Progression Factor		1.00	1.00		1.00	1.00	0.81	2.76	5.24	0.72	2.42	5.13
Incremental Delay, d2		30.0	0.1		2.2	0.1	1.9	0.6	0.1	4.3	0.6	0.1
Delay (s)		93.9	58.0		63.5	57.8	57.2	32.6	36.3	51.4	22.2	28.9
Level of Service		F	E		E	E	E	C	D	D	C	C
Approach Delay (s)		77.0			61.2			33.6			24.3	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	2787		1697		3433	3525		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	2787		1697		3433	3525		1770	3539	1583
Volume (vph)	359	9	196	33	12	44	376	1044	15	10	1125	179
Peak-hour factor, PHF	0.78	0.75	0.79	0.41	0.43	0.34	0.90	0.88	0.47	0.50	0.87	0.91
Adj. Flow (vph)	460	12	248	80	28	129	418	1186	32	20	1293	197
RTOR Reduction (vph)	0	0	38	0	28	0	0	1	0	0	0	67
Lane Group Flow (vph)	230	242	210	0	209	0	418	1217	0	20	1293	130
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	21.7	21.7	51.3		6.0		23.6	97.3		3.0	76.2	76.2
Effective Green, g (s)	23.7	23.7	51.8		8.0		24.1	99.3		3.0	78.2	78.2
Actuated g/C Ratio	0.16	0.16	0.35		0.05		0.16	0.66		0.02	0.52	0.52
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	266	267	962		91		552	2334		35	1845	825
v/s Ratio Prot	0.14	c0.14			c0.14		c0.12	0.35		0.01	c0.37	
v/s Ratio Perm			0.09									0.12
v/c Ratio	0.86	0.91	0.22		2.29		0.76	0.52		0.57	0.70	0.16
Uniform Delay, d1	61.6	62.1	34.8		71.0		60.2	13.1		72.9	27.1	18.7
Progression Factor	0.69	0.69	0.63		1.00		1.28	0.43		1.00	1.00	1.00
Incremental Delay, d2	22.9	30.1	0.0		614.7		4.3	0.7		13.2	2.2	0.4
Delay (s)	65.4	73.0	22.0		685.7		81.0	6.3		86.1	29.3	19.1
Level of Service	E	E	C		F		F	A		F	C	B
Approach Delay (s)		53.0			685.7			25.4			28.7	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	386	449	141	340	246	168
Peak-hour factor, PHF	0.80	0.94	0.84	0.89	0.83	0.89
Adj. Flow (vph)	482	478	168	382	296	189
RTOR Reduction (vph)	0	243	0	0	0	0
Lane Group Flow (vph)	482	235	168	382	296	189
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	71.9	71.9	23.6	99.5	39.5	150.0
Effective Green, g (s)	73.4	73.4	23.6	101.0	41.0	150.0
Actuated g/C Ratio	0.49	0.49	0.16	0.67	0.27	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	912	775	278	2383	938	1583
v/s Ratio Prot	0.26		c0.09	0.11	c0.09	
v/s Ratio Perm		0.30				0.12
v/c Ratio	0.53	0.30	0.60	0.16	0.32	0.12
Uniform Delay, d1	26.4	23.0	58.9	9.0	43.3	0.0
Progression Factor	1.00	1.00	0.45	0.42	1.00	1.00
Incremental Delay, d2	2.2	1.0	2.2	0.1	0.9	0.0
Delay (s)	28.6	24.0	28.6	3.9	44.2	0.0
Level of Service	C	C	C	A	D	A
Approach Delay (s)	26.3			11.5	27.0	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.19	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	352	3539	3539	1583
Volume (vph)	258	251	244	1381	1178	367
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	280	273	265	1501	1280	399
RTOR Reduction (vph)	0	107	0	0	0	85
Lane Group Flow (vph)	280	166	265	1501	1280	314
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	24.0	24.0	118.0	118.0	118.0	118.0
Effective Green, g (s)	24.0	24.0	118.0	118.0	118.0	118.0
Actuated g/C Ratio	0.16	0.16	0.79	0.79	0.79	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	283	253	277	2784	2784	1245
v/s Ratio Prot	0.16			0.42	0.36	
v/s Ratio Perm		0.17	c0.75			0.25
v/c Ratio	0.99	0.66	0.96	0.54	0.46	0.25
Uniform Delay, d1	62.9	59.1	13.8	5.9	5.3	4.3
Progression Factor	1.00	1.00	1.00	1.00	0.23	0.10
Incremental Delay, d2	50.9	12.6	44.0	0.8	0.4	0.4
Delay (s)	113.8	71.8	57.8	6.7	1.7	0.8
Level of Service	F	E	E	A	A	A
Approach Delay (s)	93.0			14.4	1.4	
Approach LOS	F			B	A	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	20	126	92	1536	1474	40
Peak Hour Factor	0.83	0.79	0.85	0.90	0.96	0.77
Hourly flow rate (vph)	24	159	108	1707	1535	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	3					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2605	768	1587			
vC1, stage 1 conf vol	1535					
vC2, stage 2 conf vol	1070					
vCu, unblocked vol	2605	768	1587			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	54	74			
cM capacity (veh/h)	140	344	410			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	24	159	108	853	853	768	768	52
Volume Left	24	0	108	0	0	0	0	0
Volume Right	0	159	0	0	0	0	0	52
cSH	140	344	410	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.46	0.26	0.50	0.50	0.45	0.45	0.03
Queue Length 95th (ft)	15	59	26	0	0	0	0	0
Control Delay (s)	36.0	24.2	16.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	E	C	C					
Approach Delay (s)	25.7		1.0			0.0		
Approach LOS	D							

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	49	24	501	125	46	497
Peak Hour Factor	0.82	0.86	0.91	0.95	0.68	0.83
Hourly flow rate (vph)	60	28	551	132	68	599
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1350	616			682	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1350	616			682	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	94			93	
cM capacity (veh/h)	153	490			911	

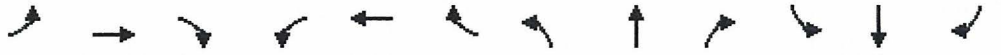
Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	60	28	682	666
Volume Left	60	0	0	68
Volume Right	0	28	132	0
cSH	153	490	1700	911
Volume to Capacity	0.39	0.06	0.40	0.07
Queue Length 95th (ft)	42	5	0	6
Control Delay (s)	42.7	12.8	0.0	1.9
Lane LOS	E	B		A
Approach Delay (s)	33.2		0.0	1.9
Approach LOS	D			

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	41	90	80	1686	1508	61
Peak Hour Factor	0.73	0.80	0.87	0.88	0.88	0.81
Hourly flow rate (vph)	56	112	92	1916	1714	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	3					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2855	857	1789			
vC1, stage 1 conf vol	1714					
vC2, stage 2 conf vol	1142					
vCu, unblocked vol	2855	857	1789			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	63	73			
cM capacity (veh/h)	116	301	342			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	56	112	92	958	958	857	857	75
Volume Left	56	0	92	0	0	0	0	0
Volume Right	0	112	0	0	0	0	0	75
cSH	116	301	342	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.37	0.27	0.56	0.56	0.50	0.50	0.04
Queue Length 95th (ft)	55	42	27	0	0	0	0	0
Control Delay (s)	62.5	24.0	19.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	C	C					
Approach Delay (s)	36.8		0.9			0.0		
Approach LOS	E							

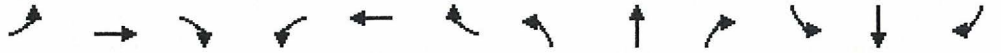
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	59	2	11	45	73	0	5	17	96	5	14
Peak Hour Factor	0.71	0.41	0.50	0.55	0.80	0.83	0.25	0.63	0.71	0.77	0.42	0.70
Hourly flow rate (vph)	52	144	4	20	56	88	0	8	24	125	12	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	144			148			372	434	146	416	392	100
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	144			148			372	434	146	416	392	100
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			100	98	97	75	98	98
cM capacity (veh/h)	1438			1434			541	489	901	506	517	955

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	52	148	20	144	0	32	125	32
Volume Left	52	0	20	0	0	0	125	0
Volume Right	0	4	0	88	0	24	0	20
cSH	1438	1700	1434	1700	1700	745	506	725
Volume to Capacity	0.04	0.09	0.01	0.08	0.00	0.04	0.25	0.04
Queue Length 95th (ft)	3	0	1	0	0	3	24	3
Control Delay (s)	7.6	0.0	7.5	0.0	0.0	10.0	14.4	10.2
Lane LOS	A		A		A	B	B	B
Approach Delay (s)	2.0		0.9		10.0		13.6	
Approach LOS					B		B	

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	27.4%	ICU Level of Service	A	
Analysis Period (min)	15			



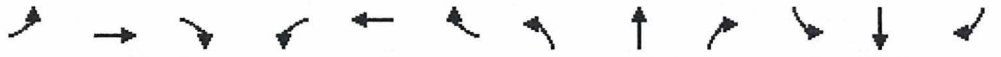
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	61	91	16	2	56	6	3	1	2	3	1	30
Peak Hour Factor	0.90	0.78	0.57	0.25	0.67	0.38	0.25	0.26	0.25	0.75	0.25	0.68
Hourly flow rate (vph)	68	117	28	8	84	16	12	4	8	4	4	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	99			145			412	382	131	370	388	91
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			145			412	382	131	370	388	91
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			99			98	99	99	99	99	95
cM capacity (veh/h)	1493			1438			502	523	919	556	519	966

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	68	145	8	99	24	52
Volume Left	68	0	8	0	12	4
Volume Right	0	28	0	16	8	44
cSH	1493	1700	1438	1700	597	860
Volume to Capacity	0.05	0.09	0.01	0.06	0.04	0.06
Queue Length 95th (ft)	4	0	0	0	3	5
Control Delay (s)	7.5	0.0	7.5	0.0	11.3	9.5
Lane LOS	A		A		B	A
Approach Delay (s)	2.4		0.6		11.3	9.5
Approach LOS					B	A

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	20.0%	ICU Level of Service	A	
Analysis Period (min)	15			

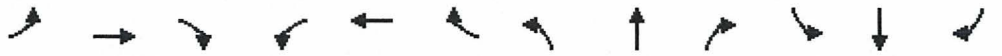
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1799	1583		1809	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.97	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1799	1583		1809	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	145	45	137	67	62	37	38	893	102	95	943	58
Peak-hour factor, PHF	0.82	0.63	0.78	0.58	0.78	0.71	0.68	0.74	0.67	0.82	0.78	0.69
Adj. Flow (vph)	177	71	176	116	79	52	56	1207	152	116	1209	84
RTOR Reduction (vph)	0	0	147	0	0	44	0	0	95	0	0	49
Lane Group Flow (vph)	0	248	29	0	195	8	56	1207	57	116	1209	35
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		11.0	11.0		10.2	10.2	2.9	26.5	26.5	6.1	29.7	29.7
Effective Green, g (s)		12.0	12.0		11.2	11.2	3.9	27.5	27.5	7.1	30.7	30.7
Actuated g/C Ratio		0.16	0.16		0.15	0.15	0.05	0.37	0.37	0.10	0.42	0.42
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)		3.5	3.5		3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		293	257		275	240	94	1319	590	170	1472	659
v/s Ratio Prot		c0.14			c0.11		0.03	c0.34		c0.07	c0.34	
v/s Ratio Perm			0.11			0.03			0.10			0.05
v/c Ratio		0.85	0.11		0.71	0.03	0.60	0.92	0.10	0.68	0.82	0.05
Uniform Delay, d1		30.0	26.4		29.8	26.7	34.2	22.0	15.1	32.3	19.1	12.9
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		20.0	0.2		8.1	0.1	6.6	10.5	0.1	8.7	4.3	0.1
Delay (s)		50.1	26.6		37.9	26.7	40.8	32.5	15.2	40.9	23.4	12.9
Level of Service		D	C		D	C	D	C	B	D	C	B
Approach Delay (s)		40.3			35.5			31.0			24.2	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	58.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1792	1583		1819	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00		0.80	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1331	1583		1491	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	60	10	56	33	36	39	25	1005	46	63	1197	49
Peak-hour factor, PHF	0.79	0.50	0.78	0.83	0.82	0.81	0.52	0.93	0.88	0.88	0.92	0.58
Adj. Flow (vph)	76	20	72	40	44	48	48	1081	52	72	1301	84
RTOR Reduction (vph)	0	0	62	0	0	42	0	0	21	0	0	32
Lane Group Flow (vph)	0	96	10	0	84	6	48	1081	31	72	1301	52
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)		7.4	7.4		7.4	7.4	2.5	37.4	37.4	3.7	38.6	38.6
Effective Green, g (s)		8.4	8.4		8.4	8.4	3.5	38.4	38.4	4.7	39.6	39.6
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.06	0.60	0.60	0.07	0.62	0.62
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)		4.0	4.0		4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		176	209		197	209	98	2140	957	131	2207	987
v/s Ratio Prot							0.03	0.31		c0.04	c0.37	
v/s Ratio Perm		c0.07	0.05		0.06	0.03			0.03			0.05
v/c Ratio		0.55	0.05		0.43	0.03	0.49	0.51	0.03	0.55	0.59	0.05
Uniform Delay, d1		25.8	24.1		25.3	24.0	29.1	7.1	5.1	28.4	7.1	4.7
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		4.3	0.1		2.0	0.1	1.4	0.4	0.0	2.5	0.6	0.0
Delay (s)		30.0	24.2		27.4	24.1	30.5	7.5	5.1	30.9	7.7	4.7
Level of Service		C	C		C	C	C	A	A	C	A	A
Approach Delay (s)		27.5			26.2			8.4			8.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	2787		1667		3433	3535		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1681	2787		1667		3433	3535		1770	3539	1583
Volume (vph)	181	0	310	1	0	2	263	843	4	6	971	157
Peak-hour factor, PHF	0.75	0.25	0.85	0.25	0.25	0.25	0.83	0.91	0.50	0.50	0.91	0.93
Adj. Flow (vph)	241	0	365	4	0	8	317	926	8	12	1067	169
RTOR Reduction (vph)	0	0	212	0	8	0	0	1	0	0	0	96
Lane Group Flow (vph)	121	120	153	0	4	0	317	933	0	12	1067	73
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	7.1	7.1	24.8		0.8		11.7	38.7		0.8	27.8	27.8
Effective Green, g (s)	9.1	9.1	24.8		2.8		11.7	40.7		0.8	29.8	29.8
Actuated g/C Ratio	0.13	0.13	0.36		0.04		0.17	0.59		0.01	0.43	0.43
Clearance Time (s)	6.0	6.0			6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	220	220	996		67		579	2073		20	1520	680
v/s Ratio Prot	c0.07	0.07			c0.01		c0.09	0.26		0.01	c0.30	
v/s Ratio Perm			0.13									0.11
v/c Ratio	0.55	0.55	0.15		0.06		0.55	0.45		0.60	0.70	0.11
Uniform Delay, d1	28.2	28.2	15.2		32.0		26.4	8.1		34.1	16.2	11.8
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.0	2.8	0.0		0.4		0.6	0.3		28.2	1.7	0.1
Delay (s)	31.2	31.0	15.2		32.4		27.0	8.3		62.4	17.9	12.0
Level of Service	C	C	B		C		C	A		E	B	B
Approach Delay (s)		21.5			32.4			13.1			17.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	270	278	129	272	244	136
Peak-hour factor, PHF	0.90	0.89	0.79	0.92	0.80	0.81
Adj. Flow (vph)	300	312	163	296	305	168
RTOR Reduction (vph)	0	182	0	0	0	0
Lane Group Flow (vph)	300	130	163	296	305	168
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	17.6	17.6	6.0	27.6	7.1	45.7
Effective Green, g (s)	19.1	19.1	6.0	29.1	8.6	45.7
Actuated g/C Ratio	0.42	0.42	0.13	0.64	0.19	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	779	662	232	2253	646	1583
v/s Ratio Prot	0.16		c0.09	0.08	c0.09	
v/s Ratio Perm		0.20				0.11
v/c Ratio	0.39	0.20	0.70	0.13	0.47	0.11
Uniform Delay, d1	9.2	8.4	19.0	3.3	16.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3	7.6	0.1	0.2	0.0
Delay (s)	9.9	8.7	26.6	3.3	16.7	0.0
Level of Service	A	A	C	A	B	A
Approach Delay (s)	9.3			11.6	10.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	45.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	37	101	74	947	1094	43
Peak Hour Factor	0.77	0.81	0.77	0.87	0.96	0.83
Hourly flow rate (vph)	48	125	96	1089	1140	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	3					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1876	570	1191			
vC1, stage 1 conf vol	1140					
vC2, stage 2 conf vol	736					
vCu, unblocked vol	1876	570	1191			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	80	73	83			
cM capacity (veh/h)	237	465	582			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	48	125	96	544	544	570	570	52
Volume Left	48	0	96	0	0	0	0	0
Volume Right	0	125	0	0	0	0	0	52
cSH	237	465	582	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.27	0.17	0.32	0.32	0.34	0.34	0.03
Queue Length 95th (ft)	18	27	15	0	0	0	0	0
Control Delay (s)	24.0	15.6	12.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	C	B					
Approach Delay (s)	17.9		1.0			0.0		
Approach LOS	C							

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	78	14	489	86	15	440
Peak Hour Factor	0.75	0.70	0.89	0.90	0.75	0.96
Hourly flow rate (vph)	104	20	549	96	20	458
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1096	597			645	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1096	597			645	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	55	96			98	
cM capacity (veh/h)	231	503			940	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	104	20	645	478
Volume Left	104	0	0	20
Volume Right	0	20	96	0
cSH	231	503	1700	940
Volume to Capacity	0.45	0.04	0.38	0.02
Queue Length 95th (ft)	54	3	0	2
Control Delay (s)	32.7	12.5	0.0	0.6
Lane LOS	D	B		A
Approach Delay (s)	29.4		0.0	0.6
Approach LOS	D			

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	44	81	35	1074	1023	66
Peak Hour Factor	0.73	0.72	0.88	0.88	0.91	0.75
Hourly flow rate (vph)	60	112	40	1220	1124	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL					
Median storage veh)	3					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1814	562	1212			
vC1, stage 1 conf vol	1124					
vC2, stage 2 conf vol	690					
vCu, unblocked vol	1814	562	1212			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	76	93			
cM capacity (veh/h)	252	470	571			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	112	40	610	610	562	562	88
Volume Left	60	0	40	0	0	0	0	0
Volume Right	0	112	0	0	0	0	0	88
cSH	252	470	571	1700	1700	1700	1700	1700
Volume to Capacity	0.24	0.24	0.07	0.36	0.36	0.33	0.33	0.05
Queue Length 95th (ft)	23	23	6	0	0	0	0	0
Control Delay (s)	23.7	15.0	11.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	C	B					
Approach Delay (s)	18.1		0.4			0.0		
Approach LOS	C							

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.0%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	43	2	8	22	52	0	6	11	86	2	17
Peak Hour Factor	0.55	0.77	0.50	0.40	0.50	0.65	0.25	0.50	0.39	0.83	0.50	0.61
Hourly flow rate (vph)	44	56	4	20	44	80	0	12	28	104	4	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	124			60			259	309	58	301	271	84
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	124			60			259	309	58	301	271	84
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			100	98	97	83	99	97
cM capacity (veh/h)	1463			1544			649	580	1008	603	609	975

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	44	60	20	124	0	40	104	32
Volume Left	44	0	20	0	0	0	104	0
Volume Right	0	4	0	80	0	28	0	28
cSH	1463	1700	1544	1700	1700	826	603	907
Volume to Capacity	0.03	0.04	0.01	0.07	0.00	0.05	0.17	0.04
Queue Length 95th (ft)	2	0	1	0	0	4	15	3
Control Delay (s)	7.5	0.0	7.4	0.0	0.0	9.6	12.2	9.1
Lane LOS	A		A		A	A	B	A
Approach Delay (s)	3.2		1.0		9.6		11.5	
Approach LOS					A		B	

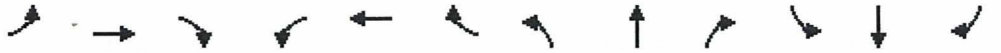
Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	26.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	45	71	10	6	37	8	5	4	7	7	3	43
Peak Hour Factor	0.70	0.74	0.63	0.38	0.71	0.40	0.63	0.33	0.58	0.25	0.38	0.63
Hourly flow rate (vph)	64	96	16	16	52	20	8	12	12	28	8	68
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	72			112			388	336	104	336	334	62
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	72			112			388	336	104	336	334	62
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			98	98	99	95	99	93
cM capacity (veh/h)	1528			1478			505	554	951	575	555	1003

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	64	112	16	72	32	104
Volume Left	64	0	16	0	8	28
Volume Right	0	16	0	20	12	68
cSH	1528	1700	1478	1700	639	795
Volume to Capacity	0.04	0.07	0.01	0.04	0.05	0.13
Queue Length 95th (ft)	3	0	1	0	4	11
Control Delay (s)	7.5	0.0	7.5	0.0	10.9	10.2
Lane LOS	A		A		B	B
Approach Delay (s)	2.7		1.3		10.9	10.2
Approach LOS					B	B

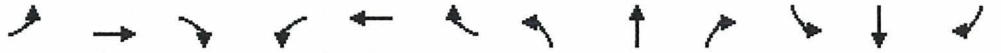
Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	19.3%	ICU Level of Service		A
Analysis Period (min)	15			

Appendix C
Level-of-Service Worksheets for 2018 Background Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1816	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.97	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1816	1583		1787	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	95	88	79	211	40	177	25	1210	40	167	1682	81
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)	103	96	86	229	43	192	27	1315	43	182	1828	88
RTOR Reduction (vph)	0	0	74	0	0	160	0	0	20	0	0	26
Lane Group Flow (vph)	0	199	12	0	272	32	27	1315	23	182	1828	62
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		16.5	16.5		19.8	19.8	6.0	54.1	54.1	14.6	62.7	62.7
Effective Green, g (s)		17.5	17.5		20.8	20.8	7.0	55.1	55.1	15.6	63.7	63.7
Actuated g/C Ratio		0.14	0.14		0.17	0.17	0.06	0.44	0.44	0.12	0.51	0.51
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	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		254	222		297	263	99	1560	698	221	1803	807
v/s Ratio Prot		c0.11			c0.15		0.02	0.37		c0.10	c0.52	
v/s Ratio Perm			0.05			0.12			0.03			0.06
v/c Ratio		0.78	0.05		0.92	0.12	0.27	0.84	0.03	0.82	1.01	0.08
Uniform Delay, d1		51.9	46.6		51.2	44.3	56.6	31.1	19.8	53.4	30.6	15.6
Progression Factor		1.00	1.00		1.00	1.00	1.22	0.57	0.19	1.16	0.89	0.38
Incremental Delay, d2		14.5	0.1		31.0	0.2	0.5	5.4	0.1	18.6	23.5	0.2
Delay (s)		66.5	46.7		82.3	44.5	69.4	23.2	3.9	80.6	50.8	6.1
Level of Service		E	D		F	D	E	C	A	F	D	A
Approach Delay (s)		60.5			66.7			23.5			51.6	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.70	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1296	1863	1583	2637	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	138	39	106	253	68	199	17	1386	104	130	1333	21
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)	150	42	115	275	74	216	18	1507	113	141	1449	23
RTOR Reduction (vph)	0	0	95	0	0	134	0	0	41	0	0	7
Lane Group Flow (vph)	150	42	20	275	74	82	18	1507	72	141	1449	16
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	21.2	21.2	21.2	21.2	21.2	21.2	4.0	78.8	78.8	10.0	84.8	84.8
Effective Green, g (s)	22.2	22.2	22.2	22.2	22.2	22.2	5.0	79.8	79.8	11.0	85.8	85.8
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.04	0.64	0.64	0.09	0.69	0.69
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	230	331	281	468	331	281	71	2259	1011	302	2429	1087
v/s Ratio Prot		0.02			0.04		0.01	c0.43		c0.04	0.41	
v/s Ratio Perm	0.12		0.07	0.10		0.14			0.07			0.01
v/c Ratio	0.65	0.13	0.07	0.59	0.22	0.29	0.25	0.67	0.07	0.47	0.60	0.01
Uniform Delay, d1	47.8	43.2	42.8	47.2	44.0	44.6	58.2	14.2	8.6	54.2	10.4	6.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.56	2.04	6.09	0.86	1.89	1.64
Incremental Delay, d2	7.2	0.2	0.2	2.2	0.5	0.8	0.4	1.0	0.1	0.3	0.9	0.0
Delay (s)	55.0	43.5	43.0	49.4	44.5	45.4	32.9	30.0	52.3	46.8	20.6	10.2
Level of Service	D	D	D	D	D	D	C	C	D	D	C	B
Approach Delay (s)		48.9			47.2			31.6			22.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1699	2787		1752		3433	3536		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1699	2787		1752		3433	3536		1770	3539	1583
Volume (vph)	211	20	347	14	2	4	433	1321	8	3	1201	110
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)	229	22	377	15	2	4	471	1436	9	3	1305	120
RTOR Reduction (vph)	0	0	114	0	4	0	0	0	0	0	0	45
Lane Group Flow (vph)	122	129	263	0	17	0	471	1445	0	3	1305	75
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	14.0	14.0	45.6		3.6		25.6	84.6		0.8	59.3	59.3
Effective Green, g (s)	16.0	16.0	46.1		5.6		26.1	86.6		0.8	61.3	61.3
Actuated g/C Ratio	0.13	0.13	0.37		0.04		0.21	0.69		0.01	0.49	0.49
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	215	217	1028		78		717	2450		11	1736	776
v/s Ratio Prot	0.07	c0.08			c0.01		c0.14	0.41		0.00	c0.37	
v/s Ratio Perm			0.14									0.08
v/c Ratio	0.57	0.59	0.26		0.22		0.66	0.59		0.27	0.75	0.10
Uniform Delay, d1	51.2	51.4	27.5		57.6		45.3	10.0		61.8	25.7	17.0
Progression Factor	1.18	1.18	1.32		1.00		0.82	1.87		1.00	1.00	1.00
Incremental Delay, d2	3.4	4.3	0.1		1.4		1.7	0.8		4.8	3.1	0.2
Delay (s)	64.0	65.1	36.4		59.0		39.0	19.5		66.6	28.8	17.3
Level of Service	E	E	D		E		D	B		E	C	B
Approach Delay (s)		47.7			59.0			24.3			27.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	331	283	81	490	439	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	360	308	88	533	477	201
RTOR Reduction (vph)	0	112	0	0	0	0
Lane Group Flow (vph)	360	196	88	533	477	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	78.2	78.2	10.5	92.7	21.3	125.0
Effective Green, g (s)	79.7	79.7	10.5	94.2	22.8	125.0
Actuated g/C Ratio	0.64	0.64	0.08	0.75	0.18	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	1188	1009	149	2667	626	1583
v/s Ratio Prot	0.19		c0.05	0.15	c0.14	
v/s Ratio Perm		0.19				0.13
v/c Ratio	0.30	0.19	0.59	0.20	0.76	0.13
Uniform Delay, d1	10.2	9.4	55.2	4.5	48.5	0.0
Progression Factor	1.00	1.00	1.07	0.30	1.00	1.00
Incremental Delay, d2	0.7	0.4	3.8	0.2	4.9	0.0
Delay (s)	10.8	9.8	62.9	1.5	53.5	0.0
Level of Service	B	A	E	A	D	A
Approach Delay (s)	10.4			10.2	37.6	
Approach LOS	B			B	D	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	67	242	116	1146	1735	98
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	263	126	1246	1886	107
RTOR Reduction (vph)	0	163	0	0	0	27
Lane Group Flow (vph)	73	100	126	1246	1886	80
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	13.1	13.1	13.1	103.9	86.8	86.8
Effective Green, g (s)	13.1	13.1	13.1	103.9	86.8	86.8
Actuated g/C Ratio	0.10	0.10	0.10	0.83	0.69	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	185	166	185	2942	2457	1099
v/s Ratio Prot	0.04		c0.07	0.35	c0.53	
v/s Ratio Perm		0.17				0.07
v/c Ratio	0.39	0.60	0.68	0.42	0.77	0.07
Uniform Delay, d1	52.2	53.5	53.9	2.7	12.5	6.1
Progression Factor	1.00	1.00	0.85	2.80	1.12	2.40
Incremental Delay, d2	1.4	6.0	8.4	0.4	0.8	0.0
Delay (s)	53.6	59.5	54.0	8.1	14.8	14.8
Level of Service	D	E	D	A	B	B
Approach Delay (s)	58.2			12.3	14.8	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.37	1.00
Satd. Flow (perm)	1770	1583	1863	1583	689	1863
Volume (vph)	118	38	571	107	34	394
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	41	621	116	37	428
RTOR Reduction (vph)	0	34	0	36	0	0
Lane Group Flow (vph)	128	7	621	80	37	428
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	10.0	10.0	39.7	39.7	39.7	39.7
Effective Green, g (s)	10.0	10.0	39.7	39.7	39.7	39.7
Actuated g/C Ratio	0.17	0.17	0.69	0.69	0.69	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	274	1282	1089	474	1282
v/s Ratio Prot	c0.07		c0.33			0.23
v/s Ratio Perm		0.03		0.07	0.05	
v/c Ratio	0.42	0.03	0.48	0.07	0.08	0.33
Uniform Delay, d1	21.3	19.8	4.2	3.0	3.0	3.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.0	0.3	0.0	0.1	0.2
Delay (s)	22.2	19.8	4.5	3.0	3.0	3.8
Level of Service	C	B	A	A	A	A
Approach Delay (s)	21.6		4.3			3.7
Approach LOS	C		A			A

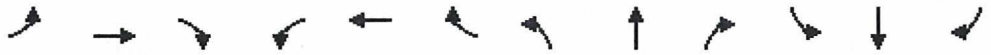
Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1830	1583		1781	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.87	1.00		0.70	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1628	1583		1304	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	19	35	124	75	6	27	31	1372	137	56	2051	31
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)	21	38	135	82	7	29	34	1491	149	61	2229	34
RTOR Reduction (vph)	0	0	94	0	0	26	0	0	38	0	0	8
Lane Group Flow (vph)	0	59	41	0	89	3	34	1491	111	61	2229	26
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		12.9	12.9		12.9	12.9	4.8	92.9	92.9	7.2	95.3	95.3
Effective Green, g (s)		12.9	12.9		12.9	12.9	4.8	92.9	92.9	7.2	95.3	95.3
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.04	0.74	0.74	0.06	0.76	0.76
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		168	163		135	163	68	2630	1176	102	2698	1207
v/s Ratio Prot							0.02	0.42		c0.03	c0.63	
v/s Ratio Perm		0.04	0.09		0.07	0.02			0.09			0.02
v/c Ratio		0.35	0.25		0.66	0.02	0.50	0.57	0.09	0.60	0.83	0.02
Uniform Delay, d1		52.2	51.6		53.9	50.4	58.9	7.1	4.4	57.5	9.5	3.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.01	1.45	1.80
Incremental Delay, d2		1.3	0.8		11.1	0.0	5.7	0.9	0.2	6.5	2.2	0.0
Delay (s)		53.4	52.4		65.0	50.4	64.6	8.0	4.6	64.8	16.0	6.5
Level of Service		D	D		E	D	E	A	A	E	B	A
Approach Delay (s)		52.7			61.4			8.9			17.1	
Approach LOS		D			E			A			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	292	180	101	1187	1720	426
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	196	110	1290	1870	463
RTOR Reduction (vph)	0	125	0	0	0	131
Lane Group Flow (vph)	317	71	110	1290	1870	332
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	27.0	27.0	11.4	98.0	82.6	82.6
Effective Green, g (s)	27.0	27.0	11.4	98.0	82.6	82.6
Actuated g/C Ratio	0.20	0.20	0.09	0.74	0.62	0.62
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	359	321	152	2608	2198	983
v/s Ratio Prot	c0.18		c0.06	0.36	c0.53	
v/s Ratio Perm		0.12				0.29
v/c Ratio	0.88	0.22	0.72	0.49	0.85	0.34
Uniform Delay, d1	51.5	44.2	59.3	7.2	20.2	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.7	0.3	15.6	0.7	4.4	0.9
Delay (s)	73.1	44.6	74.9	7.9	24.6	13.0
Level of Service	E	D	E	A	C	B
Approach Delay (s)	62.2			13.2	22.3	
Approach LOS	E			B	C	

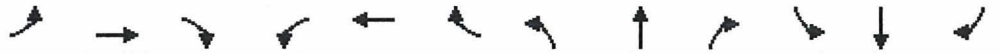
Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	133.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	116	8	21	136	52	14	6	66	152	3	14
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)	25	126	9	23	148	57	15	7	72	165	3	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked												
vC, conflicting volume	204			135			391	430	130	473	407	176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			135			391	430	130	473	407	176
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			97	99	92	63	99	98
cM capacity (veh/h)	1367			1450			541	500	919	446	516	867

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	25	135	23	204	15	78	165	18
Volume Left	25	0	23	0	15	0	165	0
Volume Right	0	9	0	57	0	72	0	15
cSH	1367	1700	1450	1700	541	859	446	774
Volume to Capacity	0.02	0.08	0.02	0.12	0.03	0.09	0.37	0.02
Queue Length 95th (ft)	1	0	1	0	2	7	42	2
Control Delay (s)	7.7	0.0	7.5	0.0	11.8	9.6	17.7	9.8
Lane LOS	A		A		B	A	C	A
Approach Delay (s)	1.2		0.8		10.0		16.9	
Approach LOS					A		C	

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		



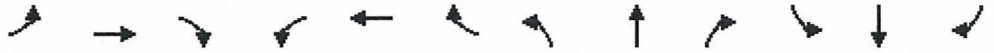
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	31	139	13	4	125	2	9	0	2	3	0	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	151	14	4	136	2	10	0	2	3	0	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked												
vC, conflicting volume	138			165			406	372	158	366	378	137
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	138			165			406	372	158	366	378	137
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			98	100	100	99	100	96
cM capacity (veh/h)	1446			1413			523	543	887	577	539	912

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	34	165	4	138	12	39
Volume Left	34	0	4	0	10	3
Volume Right	0	14	0	2	2	36
cSH	1446	1700	1413	1700	565	869
Volume to Capacity	0.02	0.10	0.00	0.08	0.02	0.05
Queue Length 95th (ft)	2	0	0	0	2	4
Control Delay (s)	7.5	0.0	7.6	0.0	11.5	9.3
Lane LOS	A		A		B	A
Approach Delay (s)	1.3		0.2		11.5	9.3
Approach LOS					B	A

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	24.9%	ICU Level of Service	A	
Analysis Period (min)	15			

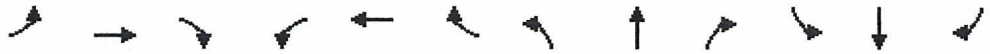
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1808	1583		1795	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.97	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1808	1583		1795	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	118	76	81	204	66	168	104	1673	56	138	1554	87
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)	128	83	88	222	72	183	113	1818	61	150	1689	95
RTOR Reduction (vph)	0	0	79	0	0	148	0	0	15	0	0	24
Lane Group Flow (vph)	0	211	9	0	294	35	113	1818	46	150	1689	71
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		15.0	15.0		27.4	27.4	12.7	70.6	70.6	17.0	74.9	74.9
Effective Green, g (s)		16.0	16.0		28.4	28.4	13.7	71.6	71.6	18.0	75.9	75.9
Actuated g/C Ratio		0.11	0.11		0.19	0.19	0.09	0.48	0.48	0.12	0.51	0.51
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)		3.5	3.5		3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		193	169		340	300	162	1689	756	212	1791	801
v/s Ratio Prot		c0.12			c0.16		0.06	c0.51		c0.08	0.48	
v/s Ratio Perm			0.06			0.12			0.04			0.06
v/c Ratio		1.09	0.06		0.86	0.12	0.70	1.08	0.06	0.71	0.94	0.09
Uniform Delay, d1		67.0	60.2		58.9	50.4	66.1	39.2	21.1	63.5	35.0	19.2
Progression Factor		1.00	1.00		1.00	1.00	1.18	0.78	0.32	0.86	1.30	2.07
Incremental Delay, d2		91.9	0.2		19.8	0.2	8.1	43.8	0.1	7.1	9.9	0.2
Delay (s)		158.9	60.4		78.7	50.6	86.2	74.2	6.9	61.7	55.4	39.9
Level of Service		F	E		E	D	F	E	A	E	E	D
Approach Delay (s)		129.9			67.9			72.8			55.1	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM Average Control Delay	68.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.61	1.00	1.00	0.68	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1138	1863	1583	2448	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	78	60	79	183	76	144	48	1641	201	286	1496	64
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)	85	65	86	199	83	157	52	1784	218	311	1626	70
RTOR Reduction (vph)	0	0	76	0	0	138	0	0	50	0	0	17
Lane Group Flow (vph)	85	65	10	199	83	19	52	1784	168	311	1626	53
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	18.1	18.1	18.1	18.1	18.1	18.1	7.5	99.7	99.7	18.2	110.4	110.4
Effective Green, g (s)	18.1	18.1	18.1	18.1	18.1	18.1	8.5	100.7	100.7	19.2	111.4	111.4
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12	0.06	0.67	0.67	0.13	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0
Lane Grp Cap (vph)	137	225	191	295	225	191	100	2376	1063	439	2628	1176
v/s Ratio Prot		0.03			0.04		0.03	c0.50		c0.09	0.46	
v/s Ratio Perm	0.07		0.05	0.08		0.10			0.14			0.04
v/c Ratio	0.62	0.29	0.05	0.67	0.37	0.10	0.52	0.75	0.16	0.71	0.62	0.05
Uniform Delay, d1	62.7	60.1	58.4	63.1	60.7	58.7	68.8	16.3	9.1	62.7	9.2	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.31	1.32	1.11	0.96	1.92	1.86
Incremental Delay, d2	8.4	0.7	0.1	6.0	1.0	0.2	0.4	0.2	0.0	3.8	0.8	0.1
Delay (s)	71.1	60.8	58.5	69.1	61.7	58.9	90.6	21.7	10.1	64.1	18.5	9.6
Level of Service	E	E	E	E	E	E	F	C	B	E	B	A
Approach Delay (s)		63.7			64.1			22.2			25.2	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	2787		1707		3433	3533		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	2787		1707		3433	3533		1770	3539	1583
Volume (vph)	369	9	279	33	12	44	446	1265	15	10	1401	179
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)	401	10	303	36	13	48	485	1375	16	11	1523	195
RTOR Reduction (vph)	0	0	55	0	24	0	0	1	0	0	0	56
Lane Group Flow (vph)	201	210	248	0	73	0	485	1390	0	11	1523	139
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	20.7	20.7	51.5		6.0		24.8	99.3		2.0	76.0	76.0
Effective Green, g (s)	22.7	22.7	52.0		8.0		25.3	101.3		2.0	78.0	78.0
Actuated g/C Ratio	0.15	0.15	0.35		0.05		0.17	0.68		0.01	0.52	0.52
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	254	256	966		91		579	2386		24	1840	823
v/s Ratio Prot	0.12	c0.12			c0.06		c0.14	0.39		0.01	c0.43	
v/s Ratio Perm			0.11									0.12
v/c Ratio	0.79	0.82	0.26		0.81		0.84	0.58		0.46	0.83	0.17
Uniform Delay, d1	61.4	61.7	35.1		70.2		60.4	13.0		73.5	30.3	18.9
Progression Factor	0.66	0.67	0.67		1.00		0.89	1.47		1.00	1.00	1.00
Incremental Delay, d2	14.3	17.3	0.0		38.7		7.0	0.7		5.0	4.4	0.4
Delay (s)	55.0	58.4	23.5		108.9		60.7	19.9		78.4	34.8	19.4
Level of Service	E	E	C		F		E	B		E	C	B
Approach Delay (s)		42.6			108.9			30.5			33.3	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	469	544	141	390	294	178
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	510	591	153	424	320	193
RTOR Reduction (vph)	0	282	0	0	0	0
Lane Group Flow (vph)	510	309	153	424	320	193
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	72.5	72.5	23.0	99.5	39.5	150.0
Effective Green, g (s)	74.0	74.0	23.0	101.0	41.0	150.0
Actuated g/C Ratio	0.49	0.49	0.15	0.67	0.27	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	919	781	271	2383	938	1583
v/s Ratio Prot	0.27		c0.09	0.12	c0.09	
v/s Ratio Perm		0.37				0.12
v/c Ratio	0.55	0.40	0.56	0.18	0.34	0.12
Uniform Delay, d1	26.5	23.9	58.9	9.1	43.7	0.0
Progression Factor	1.00	1.00	0.49	0.25	1.00	1.00
Incremental Delay, d2	2.4	1.5	1.4	0.1	1.0	0.0
Delay (s)	28.9	25.4	30.3	2.4	44.7	0.0
Level of Service	C	C	C	A	D	A
Approach Delay (s)	27.0			9.8	27.9	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	74	196	140	1753	1649	118
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	213	152	1905	1792	128
RTOR Reduction (vph)	0	196	0	0	0	24
Lane Group Flow (vph)	80	17	152	1905	1792	104
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	11.9	11.9	17.5	130.1	108.6	108.6
Effective Green, g (s)	11.9	11.9	17.5	130.1	108.6	108.6
Actuated g/C Ratio	0.08	0.08	0.12	0.87	0.72	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	140	126	207	3069	2562	1146
v/s Ratio Prot	0.05		c0.09	0.54	c0.51	
v/s Ratio Perm		0.13				0.08
v/c Ratio	0.57	0.13	0.73	0.62	0.70	0.09
Uniform Delay, d1	66.6	64.3	64.0	2.9	11.6	6.1
Progression Factor	1.00	1.00	1.00	1.89	0.84	1.18
Incremental Delay, d2	5.5	0.5	9.2	0.7	0.7	0.1
Delay (s)	72.1	64.7	73.2	6.1	10.4	7.3
Level of Service	E	E	E	A	B	A
Approach Delay (s)	66.8			11.1	10.2	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Volume (vph)	103	38	566	182	69	539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	41	615	198	75	586
RTOR Reduction (vph)	0	35	0	79	0	0
Lane Group Flow (vph)	112	6	615	119	75	586
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	9.4	9.4	39.1	39.1	4.4	47.5
Effective Green, g (s)	9.4	9.4	39.1	39.1	4.4	47.5
Actuated g/C Ratio	0.14	0.14	0.60	0.60	0.07	0.73
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	256	229	1122	954	120	1364
v/s Ratio Prot	c0.06		c0.33		c0.04	0.31
v/s Ratio Perm		0.03		0.13		
v/c Ratio	0.44	0.03	0.55	0.13	0.62	0.43
Uniform Delay, d1	25.3	23.8	7.7	5.5	29.4	3.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	0.6	0.1	9.7	0.2
Delay (s)	26.5	23.9	8.2	5.6	39.2	3.6
Level of Service	C	C	A	A	D	A
Approach Delay (s)	25.8		7.6			7.7
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1789	1583		1780	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.73	1.00		0.71	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1364	1583		1316	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	35	7	90	39	3	13	80	1946	30	12	1744	78
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)	38	8	98	42	3	14	87	2115	33	13	1896	85
RTOR Reduction (vph)	0	0	91	0	0	13	0	0	5	0	0	16
Lane Group Flow (vph)	0	46	7	0	45	1	87	2115	28	13	1896	69
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		10.2	10.2		10.2	10.2	12.5	124.6	124.6	3.2	115.3	115.3
Effective Green, g (s)		10.2	10.2		10.2	10.2	12.5	124.6	124.6	3.2	115.3	115.3
Actuated g/C Ratio		0.07	0.07		0.07	0.07	0.08	0.83	0.83	0.02	0.77	0.77
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		93	108		89	108	148	2940	1315	38	2720	1217
v/s Ratio Prot							c0.05	c0.60		0.01	0.54	
v/s Ratio Perm		0.03	0.06		0.03	0.01			0.02			0.05
v/c Ratio		0.49	0.06		0.51	0.01	0.59	0.72	0.02	0.34	0.70	0.06
Uniform Delay, d1		67.4	65.4		67.5	65.2	66.3	5.3	2.2	72.4	8.6	4.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.75	0.78	1.69
Incremental Delay, d2		4.1	0.2		4.5	0.0	5.9	1.6	0.0	3.9	1.1	0.1
Delay (s)		71.5	65.7		71.9	65.2	72.1	6.9	2.2	58.0	7.8	7.2
Level of Service		E	E		E	E	E	A	A	E	A	A
Approach Delay (s)		67.5			70.3			9.4			8.1	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	291	251	244	1636	1388	431
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	316	273	265	1778	1509	468
RTOR Reduction (vph)	0	218	0	0	0	130
Lane Group Flow (vph)	316	55	265	1778	1509	338
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	31.9	31.9	27.3	118.1	86.8	86.8
Effective Green, g (s)	31.9	31.9	27.3	118.1	86.8	86.8
Actuated g/C Ratio	0.20	0.20	0.17	0.75	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	320	306	2645	1944	870
v/s Ratio Prot	c0.18		c0.15	0.50	c0.43	
v/s Ratio Perm		0.17				0.30
v/c Ratio	0.89	0.17	0.87	0.67	0.78	0.39
Uniform Delay, d1	61.3	52.1	63.6	10.1	28.0	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.0	0.3	21.7	1.4	3.1	1.3
Delay (s)	83.3	52.4	85.3	11.5	31.1	21.7
Level of Service	F	D	F	B	C	C
Approach Delay (s)	69.0			21.1	28.9	
Approach LOS	E			C	C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	158.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
9: KAONOULU STREET & KENOLIO ROAD 12/23/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	164	17	42	140	73	10	8	36	96	10	14
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)	40	178	18	46	152	79	11	9	39	104	11	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked												
vC, conflicting volume	232			197			532	591	188	585	560	192
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	232			197			532	591	188	585	560	192
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			97	98	95	72	97	98
cM capacity (veh/h)	1336			1376			420	394	855	377	410	850

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	40	197	46	232	11	48	104	26
Volume Left	40	0	46	0	11	0	104	0
Volume Right	0	18	0	79	0	39	0	15
cSH	1336	1700	1376	1700	420	705	377	587
Volume to Capacity	0.03	0.12	0.03	0.14	0.03	0.07	0.28	0.04
Queue Length 95th (ft)	2	0	3	0	2	5	28	3
Control Delay (s)	7.8	0.0	7.7	0.0	13.8	10.5	18.1	11.4
Lane LOS	A		A		B	B	C	B
Approach Delay (s)	1.3		1.3		11.1		16.8	
Approach LOS					B		C	

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	37.1%	ICU Level of Service		A
Analysis Period (min)	15			

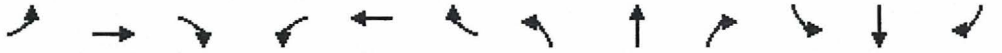
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	84	211	16	2	161	6	2	1	3	3	1	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	91	229	17	2	175	7	2	1	3	3	1	66
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked												
vC, conflicting volume	182			247			667	607	238	598	612	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	182			247			667	607	238	598	612	178
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			99	100	100	99	100	92
cM capacity (veh/h)	1394			1319			326	384	801	390	381	865

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	91	247	2	182	7	71
Volume Left	91	0	2	0	2	3
Volume Right	0	17	0	7	3	66
cSH	1394	1700	1319	1700	480	804
Volume to Capacity	0.07	0.15	0.00	0.11	0.01	0.09
Queue Length 95th (ft)	5	0	0	0	1	7
Control Delay (s)	7.8	0.0	7.7	0.0	12.6	9.9
Lane LOS	A		A		B	A
Approach Delay (s)	2.1		0.1		12.6	9.9
Approach LOS					B	A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1791	1583		1815	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.96	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1791	1583		1815	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	181	45	137	67	62	37	38	1192	102	95	1258	110
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)	197	49	149	73	67	40	41	1296	111	103	1367	120
RTOR Reduction (vph)	0	0	124	0	0	35	0	0	67	0	0	67
Lane Group Flow (vph)	0	246	25	0	140	5	41	1296	44	103	1367	53
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)		11.1	11.1		7.8	7.8	2.8	27.7	27.7	5.9	30.8	30.8
Effective Green, g (s)		12.1	12.1		8.8	8.8	3.8	28.7	28.7	6.9	31.8	31.8
Actuated g/C Ratio		0.17	0.17		0.12	0.12	0.05	0.40	0.40	0.10	0.44	0.44
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)		3.5	3.5		3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)		299	264		220	192	93	1401	627	168	1552	694
v/s Ratio Prot		c0.14			c0.08		0.02	0.37		c0.06	c0.39	
v/s Ratio Perm			0.09			0.03			0.07			0.08
v/c Ratio		0.82	0.09		0.64	0.03	0.44	0.93	0.07	0.61	0.88	0.08
Uniform Delay, d1		29.2	25.6		30.3	28.1	33.3	20.9	13.6	31.5	18.6	11.8
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		16.9	0.2		5.9	0.1	1.2	11.0	0.1	4.6	6.7	0.1
Delay (s)		46.0	25.7		36.2	28.1	34.5	31.9	13.7	36.1	25.3	11.9
Level of Service		D	C		D	C	C	C	B	D	C	B
Approach Delay (s)		38.4			34.4			30.6			25.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.7%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.70	1.00	1.00	0.72	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1313	1863	1583	2599	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	60	53	56	203	74	132	25	1234	152	249	1394	49
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	58	61	221	80	143	27	1341	165	271	1515	53
RTOR Reduction (vph)	0	0	52	0	0	122	0	0	79	0	0	22
Lane Group Flow (vph)	65	58	9	221	80	21	27	1341	86	271	1515	31
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	7.0	7.0	7.0	7.0	7.0	7.0	1.0	27.0	27.0	5.0	31.0	31.0
Effective Green, g (s)	8.0	8.0	8.0	8.0	8.0	8.0	2.0	28.0	28.0	6.0	32.0	32.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.52	0.52	0.11	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	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	195	276	235	385	276	235	66	1835	821	381	2097	938
v/s Ratio Prot		0.03			0.04		0.02	0.38		c0.08	c0.43	
v/s Ratio Perm	0.05		0.04	0.09		0.09			0.10			0.03
v/c Ratio	0.33	0.21	0.04	0.57	0.29	0.09	0.41	0.73	0.10	0.71	0.72	0.03
Uniform Delay, d1	20.6	20.2	19.7	21.4	20.5	19.9	25.4	10.1	6.6	23.2	7.8	4.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.5	0.1	2.5	0.8	0.2	1.5	1.9	0.1	5.1	1.5	0.0
Delay (s)	22.0	20.7	19.8	23.9	21.3	20.1	26.9	11.9	6.7	28.3	9.4	4.6
Level of Service	C	C	B	C	C	C	C	B	A	C	A	A
Approach Delay (s)		20.9			22.2			11.6			12.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	2787		1667		3433	3537		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1681	2787		1667		3433	3537		1770	3539	1583
Volume (vph)	186	0	388	1	0	2	337	1081	4	6	1276	157
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)	202	0	422	1	0	2	366	1175	4	7	1387	171
RTOR Reduction (vph)	0	0	211	0	2	0	0	0	0	0	0	98
Lane Group Flow (vph)	101	101	211	0	1	0	366	1179	0	7	1387	73
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	7.1	7.1	25.7		0.8		12.6	40.2		0.8	28.4	28.4
Effective Green, g (s)	9.1	9.1	25.7		2.8		12.6	42.2		0.8	30.4	30.4
Actuated g/C Ratio	0.13	0.13	0.36		0.04		0.18	0.60		0.01	0.43	0.43
Clearance Time (s)	6.0	6.0			6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	216	216	1010		66		610	2105		20	1517	679
v/s Ratio Prot	0.06	0.06			c0.00		c0.11	0.33		0.00	c0.39	
v/s Ratio Perm			0.15									0.11
v/c Ratio	0.47	0.47	0.21		0.02		0.60	0.56		0.35	0.91	0.11
Uniform Delay, d1	28.7	28.7	15.6		32.7		26.8	8.7		34.8	19.0	12.1
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	1.6	0.0		0.1		1.1	0.5		3.8	9.1	0.1
Delay (s)	30.3	30.3	15.6		32.8		27.9	9.2		38.6	28.2	12.3
Level of Service	C	C	B		C		C	A		D	C	B
Approach Delay (s)		20.4			32.8			13.6			26.5	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	348	420	129	347	319	141
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	378	457	140	377	347	153
RTOR Reduction (vph)	0	254	0	0	0	0
Lane Group Flow (vph)	378	203	140	377	347	153
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	19.6	19.6	5.9	29.5	7.1	47.6
Effective Green, g (s)	21.1	21.1	5.9	31.0	8.6	47.6
Actuated g/C Ratio	0.44	0.44	0.12	0.65	0.18	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	826	702	219	2305	620	1583
v/s Ratio Prot	0.20		c0.08	0.11	c0.10	
v/s Ratio Perm		0.29				0.10
v/c Ratio	0.46	0.29	0.64	0.16	0.56	0.10
Uniform Delay, d1	9.3	8.5	19.8	3.2	17.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.5	4.5	0.1	0.6	0.0
Delay (s)	10.1	8.9	24.3	3.3	18.4	0.0
Level of Service	B	A	C	A	B	A
Approach Delay (s)	9.5			9.0	12.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.16	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	294	3539	3539	1583
Volume (vph)	98	178	135	1185	1307	145
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	193	147	1288	1421	158
RTOR Reduction (vph)	0	63	0	0	0	39
Lane Group Flow (vph)	107	130	147	1288	1421	119
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	9.4	9.4	52.5	52.5	52.5	52.5
Effective Green, g (s)	9.4	9.4	52.5	52.5	52.5	52.5
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.75	0.75
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	213	221	2658	2658	1189
v/s Ratio Prot	0.06			0.36	0.40	
v/s Ratio Perm		0.12	c0.50			0.10
v/c Ratio	0.45	0.61	0.67	0.48	0.53	0.10
Uniform Delay, d1	27.9	28.5	4.3	3.4	3.6	2.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	4.9	7.3	0.1	0.2	0.0
Delay (s)	29.2	33.4	11.7	3.5	3.8	2.4
Level of Service	C	C	B	A	A	A
Approach Delay (s)	31.9			4.4	3.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.37	1.00
Satd. Flow (perm)	1770	1583	1863	1583	693	1863
Volume (vph)	136	30	559	152	52	475
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	33	608	165	57	516
RTOR Reduction (vph)	0	27	0	54	0	0
Lane Group Flow (vph)	148	6	608	111	57	516
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	10.5	10.5	37.8	37.8	37.8	37.8
Effective Green, g (s)	10.5	10.5	37.8	37.8	37.8	37.8
Actuated g/C Ratio	0.19	0.19	0.67	0.67	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	330	295	1251	1063	465	1251
v/s Ratio Prot	c0.08		c0.33			0.28
v/s Ratio Perm		0.02		0.10	0.08	
v/c Ratio	0.45	0.02	0.49	0.10	0.12	0.41
Uniform Delay, d1	20.3	18.7	4.5	3.3	3.3	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.0	0.3	0.0	0.1	0.2
Delay (s)	21.3	18.7	4.8	3.3	3.4	4.4
Level of Service	C	B	A	A	A	A
Approach Delay (s)	20.8		4.5			4.3
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

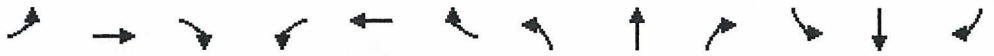
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00				1.00	0.95			0.95	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1583				1770	3539			3539	1583
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1583				1770	3539			3539	1583
Volume (vph)	44	0	81	0	0	0	35	1373	0	0	1313	66
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	0	88	0	0	0	38	1492	0	0	1427	72
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	48	10	0	0	0	38	1492	0	0	1427	49
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		7.8	7.8				2.0	53.1			47.1	47.1
Effective Green, g (s)		7.8	7.8				2.0	53.1			47.1	47.1
Actuated g/C Ratio		0.11	0.11				0.03	0.77			0.68	0.68
Clearance Time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Vehicle Extension (s)		3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		160	179				51	2727			2419	1082
v/s Ratio Prot							0.02	c0.42			c0.40	
v/s Ratio Perm		0.03	0.06									0.05
v/c Ratio		0.30	0.06				0.75	0.55			0.59	0.05
Uniform Delay, d1		28.0	27.3				33.2	3.1			5.8	3.6
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		1.1	0.1				44.3	0.2			0.4	0.0
Delay (s)		29.1	27.4				77.5	3.4			6.2	3.6
Level of Service		C	C				E	A			A	A
Approach Delay (s)		28.0			0.0			5.2			6.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	68.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	294	255	214	918	893	356
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	277	233	998	971	387
RTOR Reduction (vph)	0	216	0	0	0	190
Lane Group Flow (vph)	320	61	233	998	971	197
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.5	26.5	20.5	85.5	61.0	61.0
Effective Green, g (s)	26.5	26.5	20.5	85.5	61.0	61.0
Actuated g/C Ratio	0.22	0.22	0.17	0.71	0.51	0.51
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	391	350	302	2522	1799	805
v/s Ratio Prot	c0.18		c0.13	0.28	c0.27	
v/s Ratio Perm		0.17				0.24
v/c Ratio	0.82	0.17	0.77	0.40	0.54	0.24
Uniform Delay, d1	44.5	37.9	47.5	6.9	20.0	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.5	0.2	11.5	0.5	1.2	0.7
Delay (s)	57.0	38.1	59.1	7.4	21.2	17.3
Level of Service	E	D	E	A	C	B
Approach Delay (s)	48.2			17.2	20.1	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
9: KAONOULU STREET & KENOLIO ROAD 11/1/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	162	12	27	166	52	10	9	30	86	5	17
Peak Hour Factor	0.55	0.77	0.50	0.40	0.50	0.65	0.25	0.50	0.39	0.83	0.50	0.61
Hourly flow rate (vph)	44	210	24	68	332	80	40	18	77	104	10	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked												
vC, conflicting volume	412			234			810	857	222	891	829	372
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412			234			810	857	222	891	829	372
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			85	93	91	51	96	96
cM capacity (veh/h)	1147			1333			260	269	817	211	280	674

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	44	234	68	412	40	95	104	38
Volume Left	44	0	68	0	40	0	104	0
Volume Right	0	24	0	80	0	77	0	28
cSH	1147	1700	1333	1700	260	590	211	491
Volume to Capacity	0.04	0.14	0.05	0.24	0.15	0.16	0.49	0.08
Queue Length 95th (ft)	3	0	4	0	13	14	61	6
Control Delay (s)	8.3	0.0	7.8	0.0	21.3	12.3	37.4	12.9
Lane LOS	A		A		C	B	E	B
Approach Delay (s)	1.3		1.1		15.0		30.8	
Approach LOS					B		D	

Intersection Summary				
Average Delay	7.0			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
10: KAONOULU STREET & ALULIKE STREET 11/1/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	73	200	10	6	191	8	5	4	7	7	3	95
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)	79	217	11	7	208	9	5	4	8	8	3	103
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked												
vC, conflicting volume	216			228			707	611	223	611	612	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			228			707	611	223	611	612	212
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			98	99	99	98	99	88
cM capacity (veh/h)	1353			1340			290	383	817	379	382	828

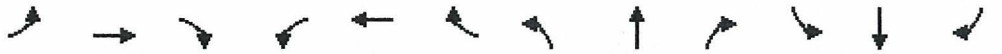
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	79	228	7	216	17	114
Volume Left	79	0	7	0	5	8
Volume Right	0	11	0	9	8	103
cSH	1353	1700	1340	1700	441	745
Volume to Capacity	0.06	0.13	0.00	0.13	0.04	0.15
Queue Length 95th (ft)	5	0	0	0	3	13
Control Delay (s)	7.8	0.0	7.7	0.0	13.5	10.7
Lane LOS	A		A		B	B
Approach Delay (s)	2.0		0.2		13.5	10.7
Approach LOS					B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	31.2%	ICU Level of Service		A
Analysis Period (min)	15			

Appendix D
Level-of-Service Worksheets for 2018 Background Plus Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	95	88	96	228	40	177	38	1293	53	167	1783	81
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)	103	96	104	248	43	192	41	1405	58	182	1938	88
RTOR Reduction (vph)	0	0	92	0	0	164	0	0	25	0	0	25
Lane Group Flow (vph)	103	96	12	248	43	28	41	1405	33	182	1938	63
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)	13.0	13.0	13.0	17.0	17.0	17.0	8.0	60.4	60.4	14.6	67.0	67.0
Effective Green, g (s)	14.0	14.0	14.0	18.0	18.0	18.0	9.0	61.4	61.4	15.6	68.0	68.0
Actuated g/C Ratio	0.11	0.11	0.11	0.14	0.14	0.14	0.07	0.49	0.49	0.12	0.54	0.54
Clearance Time (s)	5.0	5.0	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	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	198	209	177	255	268	228	127	1738	778	221	1925	861
v/s Ratio Prot	0.06	0.05		c0.14	0.02		0.02	0.40		c0.10	c0.55	
v/s Ratio Perm			0.07			0.12			0.04			0.06
v/c Ratio	0.52	0.46	0.07	0.97	0.16	0.12	0.32	0.81	0.04	0.82	1.01	0.07
Uniform Delay, d1	52.3	52.0	49.6	53.3	46.9	46.6	55.1	26.8	16.5	53.4	28.5	13.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.16	0.80	0.45
Incremental Delay, d2	2.5	1.6	0.2	48.4	0.3	0.2	0.5	4.2	0.1	18.1	20.7	0.1
Delay (s)	54.8	53.6	49.8	101.7	47.2	46.8	55.6	31.0	16.6	79.9	43.5	6.3
Level of Service	D	D	D	F	D	D	E	C	B	E	D	A
Approach Delay (s)		52.7			75.0			31.1			45.0	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.70	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1297	1863	1583	2637	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	138	39	123	270	68	199	30	1441	117	130	1400	21
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)	150	42	134	293	74	216	33	1566	127	141	1522	23
RTOR Reduction (vph)	0	0	110	0	0	130	0	0	45	0	0	8
Lane Group Flow (vph)	150	42	24	293	74	86	33	1566	82	141	1522	15
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	21.4	21.4	21.4	21.4	21.4	21.4	6.0	78.6	78.6	10.0	82.6	82.6
Effective Green, g (s)	22.4	22.4	22.4	22.4	22.4	22.4	7.0	79.6	79.6	11.0	83.6	83.6
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.06	0.64	0.64	0.09	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	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	232	334	284	473	334	284	99	2254	1008	302	2367	1059
v/s Ratio Prot		0.02			0.04		0.02	c0.44		c0.04	c0.43	
v/s Ratio Perm	0.12		0.08	0.11		0.14			0.08			0.01
v/c Ratio	0.65	0.13	0.08	0.62	0.22	0.30	0.33	0.69	0.08	0.47	0.64	0.01
Uniform Delay, d1	47.6	43.1	42.8	47.4	43.8	44.5	56.8	14.8	8.7	54.2	12.0	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.63	1.68	4.98	0.88	1.82	1.77
Incremental Delay, d2	6.8	0.2	0.2	2.8	0.5	0.8	0.5	1.2	0.1	0.3	1.0	0.0
Delay (s)	54.4	43.3	42.9	50.1	44.3	45.4	36.1	26.0	43.4	48.1	23.0	12.3
Level of Service	D	D	D	D	D	D	D	C	D	D	C	B
Approach Delay (s)		48.2			47.6			27.5			24.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	30.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1699	2787		1752		3433	3536		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1699	2787		1752		3433	3536		1770	3539	1583
Volume (vph)	211	20	381	14	2	4	461	1349	8	3	1235	110
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)	229	22	414	15	2	4	501	1466	9	3	1342	120
RTOR Reduction (vph)	0	0	111	0	4	0	0	0	0	0	0	45
Lane Group Flow (vph)	122	129	303	0	17	0	501	1475	0	3	1342	75
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	14.0	14.0	46.8		3.6		26.8	84.6		0.8	58.1	58.1
Effective Green, g (s)	16.0	16.0	47.3		5.6		27.3	86.6		0.8	60.1	60.1
Actuated g/C Ratio	0.13	0.13	0.38		0.04		0.22	0.69		0.01	0.48	0.48
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	215	217	1055		78		750	2450		11	1702	761
v/s Ratio Prot	0.07	c0.08			c0.01		c0.15	0.42		0.00	c0.38	
v/s Ratio Perm			0.15									0.08
v/c Ratio	0.57	0.59	0.29		0.22		0.67	0.60		0.27	0.79	0.10
Uniform Delay, d1	51.2	51.4	27.1		57.6		44.7	10.1		61.8	27.1	17.7
Progression Factor	1.14	1.14	1.33		1.00		0.96	1.71		1.00	1.00	1.00
Incremental Delay, d2	3.4	4.3	0.1		1.4		1.7	0.8		4.8	3.8	0.3
Delay (s)	61.9	62.9	36.1		59.0		44.5	18.2		66.6	30.9	17.9
Level of Service	E	E	D		E		D	B		E	C	B
Approach Delay (s)		46.0			59.0			24.9			29.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	365	300	81	518	452	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	326	88	563	491	201
RTOR Reduction (vph)	0	120	0	0	0	0
Lane Group Flow (vph)	397	206	88	563	491	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	77.6	77.6	10.5	92.1	21.9	125.0
Effective Green, g (s)	79.1	79.1	10.5	93.6	23.4	125.0
Actuated g/C Ratio	0.63	0.63	0.08	0.75	0.19	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	1179	1002	149	2650	643	1583
v/s Ratio Prot	c0.21		c0.05	0.16	c0.14	
v/s Ratio Perm		0.21				0.13
v/c Ratio	0.34	0.21	0.59	0.21	0.76	0.13
Uniform Delay, d1	10.7	9.7	55.2	4.7	48.2	0.0
Progression Factor	1.00	1.00	1.13	0.29	1.00	1.00
Incremental Delay, d2	0.8	0.5	3.8	0.2	4.8	0.0
Delay (s)	11.5	10.2	65.9	1.5	53.0	0.0
Level of Service	B	B	E	A	D	A
Approach Delay (s)	10.9			10.2	37.6	
Approach LOS	B			B	D	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	0.88	1.00	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Volume (vph)	77	60	242	121	58	121	116	1137	140	123	1741	96
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)	84	65	263	132	63	132	126	1236	152	134	1892	104
RTOR Reduction (vph)	0	0	15	0	0	122	0	0	39	0	0	25
Lane Group Flow (vph)	84	65	248	132	63	10	126	1236	113	134	1892	79
Turn Type	Prot		pm+ov	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.2	11.8	29.4	11.6	11.2	11.2	17.6	102.5	114.1	11.1	96.0	96.0
Effective Green, g (s)	12.2	11.8	29.4	11.6	11.2	11.2	17.6	102.5	114.1	11.1	96.0	96.0
Actuated g/C Ratio	0.08	0.08	0.19	0.08	0.07	0.07	0.12	0.67	0.75	0.07	0.63	0.63
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	141	273	346	260	136	204	204	2371	2151	249	2221	993
v/s Ratio Prot	c0.05	0.02	c0.09	0.04	0.03		0.07	0.35	0.01	0.04	c0.53	
v/s Ratio Perm			0.08			0.05			0.05			0.07
v/c Ratio	0.60	0.24	0.72	0.51	0.46	0.05	0.62	0.52	0.05	0.54	0.85	0.08
Uniform Delay, d1	68.0	66.4	57.9	68.0	68.0	65.9	64.5	12.8	5.1	68.5	22.8	11.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.5	6.9	1.6	2.5	0.1	5.5	0.8	0.0	2.2	4.4	0.2
Delay (s)	74.6	66.8	64.8	69.5	70.5	66.0	70.0	13.6	5.2	70.7	27.2	11.3
Level of Service	E	E	E	E	E	E	E	B	A	E	C	B
Approach Delay (s)		67.1			68.3			17.5			29.1	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	153.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.36	1.00
Satd. Flow (perm)	1770	1583	1863	1583	674	1863
Volume (vph)	143	63	571	137	64	394
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	155	68	621	149	70	428
RTOR Reduction (vph)	0	55	0	51	0	0
Lane Group Flow (vph)	155	13	621	98	70	428
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	10.2	10.2	35.4	35.4	35.4	35.4
Effective Green, g (s)	10.2	10.2	35.4	35.4	35.4	35.4
Actuated g/C Ratio	0.19	0.19	0.66	0.66	0.66	0.66
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	337	301	1230	1045	445	1230
v/s Ratio Prot	c0.09		c0.33			0.23
v/s Ratio Perm		0.04		0.09	0.10	
v/c Ratio	0.46	0.04	0.50	0.09	0.16	0.35
Uniform Delay, d1	19.3	17.7	4.6	3.3	3.4	4.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1	0.3	0.0	0.2	0.2
Delay (s)	20.3	17.8	5.0	3.3	3.6	4.2
Level of Service	C	B	A	A	A	A
Approach Delay (s)	19.5		4.6			4.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1819	1583		1781	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.76	1.00		0.65	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1423	1583		1214	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	32	35	124	75	6	27	31	1489	137	56	2147	42
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	38	135	82	7	29	34	1618	149	61	2334	46
RTOR Reduction (vph)	0	0	91	0	0	26	0	0	39	0	0	10
Lane Group Flow (vph)	0	73	44	0	89	3	34	1618	110	61	2334	36
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		13.1	13.1		13.1	13.1	4.8	92.7	92.7	7.2	95.1	95.1
Effective Green, g (s)		13.1	13.1		13.1	13.1	4.8	92.7	92.7	7.2	95.1	95.1
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.04	0.74	0.74	0.06	0.76	0.76
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		149	166		127	166	68	2625	1174	102	2692	1204
v/s Ratio Prot							0.02	0.46		c0.03	c0.66	
v/s Ratio Perm		0.05	0.09		0.07	0.02			0.09			0.03
v/c Ratio		0.49	0.26		0.70	0.02	0.50	0.62	0.09	0.60	0.87	0.03
Uniform Delay, d1		52.8	51.5		54.1	50.2	58.9	7.7	4.5	57.5	10.5	3.7
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		2.5	0.8		16.0	0.0	5.7	1.1	0.2	9.1	4.1	0.0
Delay (s)		55.3	52.4		70.1	50.2	64.6	8.8	4.6	66.6	14.6	3.7
Level of Service		E	D		E	D	E	A	A	E	B	A
Approach Delay (s)		53.4			65.2			9.5			15.7	
Approach LOS		D			E			A			B	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	425	180	101	1271	1789	454
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	462	196	110	1382	1945	493
RTOR Reduction (vph)	0	119	0	0	0	141
Lane Group Flow (vph)	462	77	110	1382	1945	352
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	30.0	30.0	11.3	95.0	79.7	79.7
Effective Green, g (s)	30.0	30.0	11.3	95.0	79.7	79.7
Actuated g/C Ratio	0.23	0.23	0.08	0.71	0.60	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	399	357	150	2528	2121	949
v/s Ratio Prot	c0.26		c0.06	0.39	c0.55	
v/s Ratio Perm		0.12				0.31
v/c Ratio	1.16	0.21	0.73	0.55	0.92	0.37
Uniform Delay, d1	51.5	41.9	59.4	8.9	23.7	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	95.6	0.3	16.8	0.9	7.8	1.1
Delay (s)	147.1	42.2	76.2	9.8	31.5	14.8
Level of Service	F	D	E	A	C	B
Approach Delay (s)	115.9			14.7	28.1	
Approach LOS	F			B	C	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	133.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97					1.00
Frt	1.00	1.00	0.85		1.00		1.00					0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95					1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433					1583
Flt Permitted	0.70	1.00	1.00		1.00		0.76					1.00
Satd. Flow (perm)	2538	3539	1583		3539		2736					1583
Volume (vph)	143	34	94	0	74	0	74	0	0	0	0	63
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)	155	37	102	0	80	0	80	0	0	0	0	68
RTOR Reduction (vph)	0	0	61	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	155	37	41	0	80	0	80	0	0	0	0	27
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	16.0	16.0	16.0		16.0		16.0					16.0
Effective Green, g (s)	16.0	16.0	16.0		16.0		16.0					16.0
Actuated g/C Ratio	0.40	0.40	0.40		0.40		0.40					0.40
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Lane Grp Cap (vph)	1015	1416	633		1416		1094					633
v/s Ratio Prot		0.01			0.02							
v/s Ratio Perm	0.06		0.06				0.03					0.04
v/c Ratio	0.15	0.03	0.06		0.06		0.07					0.04
Uniform Delay, d1	7.7	7.3	7.4		7.4		7.4					7.3
Progression Factor	1.00	1.00	1.00		1.00		1.00					1.00
Incremental Delay, d2	0.3	0.0	0.2		0.1		0.1					0.1
Delay (s)	8.0	7.3	7.6		7.4		7.5					7.5
Level of Service	A	A	A		A		A					A
Approach Delay (s)		7.8			7.4			7.5			7.5	
Approach LOS		A			A			A			A	

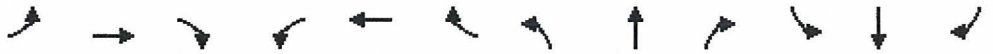
Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	176	8	21	185	60	14	6	66	162	3	14
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)	25	191	9	23	201	65	15	7	72	176	3	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	266			200			509	558	196	596	529	234
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	259			200			504	553	196	592	525	226
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			97	98	92	52	99	98
cM capacity (veh/h)	1293			1372			449	421	846	364	437	805

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	25	200	23	266	15	78	176	18
Volume Left	25	0	23	0	15	0	176	0
Volume Right	0	9	0	65	0	72	0	15
cSH	1293	1700	1372	1700	449	780	364	701
Volume to Capacity	0.02	0.12	0.02	0.16	0.03	0.10	0.48	0.03
Queue Length 95th (ft)	1	0	1	0	3	8	63	2
Control Delay (s)	7.8	0.0	7.7	0.0	13.3	10.1	23.8	10.3
Lane LOS	A		A		B	B	C	B
Approach Delay (s)	0.9		0.6		10.6		22.5	
Approach LOS					B		C	

Intersection Summary				
Average Delay	7.2			
Intersection Capacity Utilization	41.4%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	31	204	13	4	190	2	9	0	2	3	0	70
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)	34	222	14	4	207	2	10	0	2	3	0	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked												
vC, conflicting volume	209			236			588	514	229	508	520	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	209			236			588	514	229	508	520	208
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			97	100	100	99	100	91
cM capacity (veh/h)	1362			1331			374	451	810	464	448	833

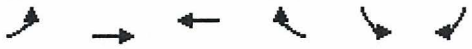
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	34	236	4	209	12	79
Volume Left	34	0	4	0	10	3
Volume Right	0	14	0	2	2	76
cSH	1362	1700	1331	1700	415	806
Volume to Capacity	0.02	0.14	0.00	0.12	0.03	0.10
Queue Length 95th (ft)	2	0	0	0	2	8
Control Delay (s)	7.7	0.0	7.7	0.0	13.9	10.0
Lane LOS	A		A		B	A
Approach Delay (s)	1.0		0.2		13.9	10.0
Approach LOS					B	A

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	29.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	272	88	0	301	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	296	96	0	327	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	305			296		
pX, platoon unblocked						
vC, conflicting volume			391		459	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			391		459	148
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1164		530	872

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	148	148	96	164	164	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	96	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.09	0.09	0.06	0.10	0.10	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	11.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	272	209	0	0	92
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	296	227	0	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		435	166			
pX, platoon unblocked						
vC, conflicting volume	227				375	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				375	114
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	1338				599	918

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	148	148	114	114	0	100
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	100
cSH	1700	1700	1700	1700	1700	918
Volume to Capacity	0.09	0.09	0.07	0.07	0.00	0.11
Queue Length 95th (ft)	0	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.4
Approach LOS						A

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2	32	0	3	70	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	35	0	3	76	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	601					
pX, platoon unblocked						
vC, conflicting volume			37		4	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			37		4	2
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	100
cM capacity (veh/h)			1572		1017	1081

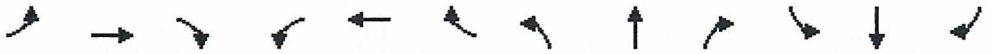
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	2	35	0	2	2	76	0
Volume Left	0	0	0	0	0	76	0
Volume Right	0	35	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1017	1700
Volume to Capacity	0.00	0.02	0.00	0.00	0.00	0.07	0.00
Queue Length 95th (ft)	0	0	0	0	0	6	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	8.8	0.0
Lane LOS						A	A
Approach Delay (s)	0.0		0.0			8.8	
Approach LOS						A	

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	13.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	2	0	0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	0	3	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	751					
pX, platoon unblocked						
vC, conflicting volume			2		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1620		1023	1085

Direction, Lane #	EB 1	NB 1
Volume Total	2	3
Volume Left	0	3
Volume Right	2	0
cSH	1700	1023
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	8.5
Lane LOS		A
Approach Delay (s)	0.0	8.5
Approach LOS		A

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

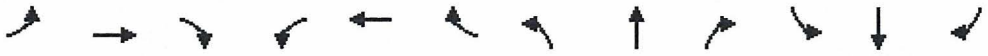


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1681	1719	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1681	1719	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	118	76	125	248	66	168	152	1958	104	138	1817	87
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)	128	83	136	270	72	183	165	2128	113	150	1975	95
RTOR Reduction (vph)	0	0	125	0	0	133	0	0	22	0	0	20
Lane Group Flow (vph)	128	83	11	167	175	50	165	2128	91	150	1975	75
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.0	14.0	14.0	18.9	18.9	18.9	18.7	111.3	111.3	15.8	108.4	108.4
Effective Green, g (s)	15.0	15.0	15.0	19.9	19.9	19.9	19.7	112.3	112.3	16.8	109.4	109.4
Actuated g/C Ratio	0.08	0.08	0.08	0.11	0.11	0.11	0.11	0.62	0.62	0.09	0.61	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.5	3.5	3.5	3.0	3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	148	155	132	186	190	175	194	2208	988	165	2151	962
v/s Ratio Prot	0.07	0.04		0.10	0.10		c0.09	c0.60		0.08	0.56	
v/s Ratio Perm			0.09			0.12			0.07			0.06
v/c Ratio	0.86	0.54	0.09	0.90	0.92	0.28	0.85	0.96	0.09	0.91	0.92	0.08
Uniform Delay, d1	81.5	79.2	76.2	79.0	79.3	73.5	78.7	31.9	13.5	80.8	31.3	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.03	0.47	0.57	0.79	1.16	1.98
Incremental Delay, d2	38.1	4.0	0.3	38.3	43.4	0.9	17.5	8.2	0.1	34.8	5.8	0.1
Delay (s)	119.6	83.1	76.5	117.3	122.7	74.4	98.9	23.4	7.7	98.9	42.1	28.9
Level of Service	F	F	E	F	F	E	F	C	A	F	D	C
Approach Delay (s)		94.0			104.1			27.8			45.4	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM Average Control Delay	46.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.0%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.60	1.00	1.00	0.66	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1110	1863	1583	2376	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	78	60	123	227	76	144	96	1832	249	285	1672	64
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)	85	65	134	247	83	157	104	1991	271	310	1817	70
RTOR Reduction (vph)	0	0	117	0	0	137	0	0	52	0	0	14
Lane Group Flow (vph)	85	65	17	247	83	20	104	1991	219	310	1817	56
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	23.4	23.4	23.4	23.4	23.4	23.4	14.5	122.1	122.1	20.5	128.1	128.1
Effective Green, g (s)	23.4	23.4	23.4	23.4	23.4	23.4	15.5	123.1	123.1	21.5	129.1	129.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.09	0.68	0.68	0.12	0.72	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0
Lane Grp Cap (vph)	144	242	206	309	242	206	152	2420	1083	410	2538	1135
v/s Ratio Prot		0.03			0.04		0.06	c0.56		c0.09	0.51	
v/s Ratio Perm	0.08		0.08	c0.10		0.10			0.17			0.04
v/c Ratio	0.59	0.27	0.08	0.80	0.34	0.10	0.68	0.82	0.20	0.76	0.72	0.05
Uniform Delay, d1	73.8	70.6	68.9	76.0	71.3	69.0	79.9	20.6	10.4	76.7	14.8	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.83	2.38	0.85	2.33	2.73
Incremental Delay, d2	6.3	0.6	0.2	13.5	.0.9	0.2	4.5	1.2	0.2	5.3	1.2	0.1
Delay (s)	80.1	71.2	69.1	89.5	72.2	69.2	79.6	38.9	24.9	70.7	35.7	20.4
Level of Service	F	E	E	F	E	E	E	D	C	E	D	C
Approach Delay (s)		72.9			80.0			39.1			40.2	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

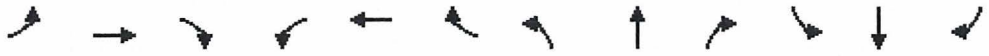


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	2787		1707		3433	3534		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	2787		1707		3433	3534		1770	3539	1583
Volume (vph)	369	9	366	33	12	44	541	1360	15	10	1488	179
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)	401	10	398	36	13	48	588	1478	16	11	1617	195
RTOR Reduction (vph)	0	0	77	0	20	0	0	0	0	0	0	49
Lane Group Flow (vph)	201	210	321	0	77	0	588	1494	0	11	1617	146
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	23.9	23.9	63.0		9.6		33.1	122.5		2.0	90.9	90.9
Effective Green, g (s)	25.9	25.9	63.5		11.6		33.6	124.5		2.0	92.9	92.9
Actuated g/C Ratio	0.14	0.14	0.35		0.06		0.19	0.69		0.01	0.52	0.52
Clearance Time (s)	6.0	6.0			6.0		4.5	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	242	243	983		110		641	2444		20	1827	817
v/s Ratio Prot	0.12	c0.12			c0.06		c0.17	0.42		0.01	c0.46	
v/s Ratio Perm			0.14									0.12
v/c Ratio	0.83	0.86	0.33		0.70		0.92	0.61		0.55	0.89	0.18
Uniform Delay, d1	74.9	75.3	42.6		82.5		71.8	14.8		88.6	38.8	23.2
Progression Factor	0.76	0.76	1.09		1.00		0.93	1.17		1.00	1.00	1.00
Incremental Delay, d2	18.6	23.1	0.1		18.4		11.8	0.7		17.2	6.7	0.5
Delay (s)	75.5	80.5	46.6		100.9		78.3	18.0		105.8	45.5	23.7
Level of Service	E	F	D		F		E	B		F	D	C
Approach Delay (s)		62.6			100.9			35.0			43.5	
Approach LOS		E			F			D			D	

Intersection Summary			
HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	556	588	141	485	342	178
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	604	639	153	527	372	193
RTOR Reduction (vph)	0	197	0	0	0	149
Lane Group Flow (vph)	604	442	153	527	372	44
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	101.6	101.6	24.0	129.6	39.4	39.4
Effective Green, g (s)	103.1	103.1	24.0	131.1	40.9	40.9
Actuated g/C Ratio	0.57	0.57	0.13	0.73	0.23	0.23
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	5.5
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	2.0
Lane Grp Cap (vph)	1067	907	236	2578	780	360
v/s Ratio Prot	0.32		c0.09	0.15	0.11	
v/s Ratio Perm		0.40				0.12
v/c Ratio	0.57	0.49	0.65	0.20	0.48	0.12
Uniform Delay, d1	24.3	22.8	74.0	7.8	60.3	55.3
Progression Factor	1.00	1.00	1.13	0.20	1.00	1.00
Incremental Delay, d2	2.2	1.9	3.1	0.1	2.1	0.7
Delay (s)	26.5	24.7	86.8	1.7	62.4	56.0
Level of Service	C	C	F	A	E	E
Approach Delay (s)	25.5			20.9	60.2	
Approach LOS	C			C	E	

Intersection Summary			
HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	0.88	1.00	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Volume (vph)	76	183	196	528	200	545	140	1589	507	482	1517	120
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	80	193	206	556	211	574	147	1673	534	507	1597	126
RTOR Reduction (vph)	0	0	16	0	0	71	0	0	19	0	0	32
Lane Group Flow (vph)	80	193	190	556	211	503	147	1673	515	507	1597	94
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		Perm
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.9	14.3	32.3	30.0	31.4	61.0	18.0	90.1	120.1	29.6	101.7	101.7
Effective Green, g (s)	12.9	14.3	32.3	30.0	31.4	61.0	18.0	90.1	120.1	29.6	101.7	101.7
Actuated g/C Ratio	0.07	0.08	0.18	0.17	0.17	0.34	0.10	0.50	0.67	0.16	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	127	281	319	572	325	1006	177	1771	1921	565	2000	894
v/s Ratio Prot	0.05	0.05	0.06	c0.16	c0.11	0.09	0.08	c0.47	0.05	c0.15	0.45	
v/s Ratio Perm			0.07			0.11			0.15			0.08
v/c Ratio	0.63	0.69	0.60	0.97	0.65	0.50	0.83	0.94	0.27	0.90	0.80	0.11
Uniform Delay, d1	81.2	80.7	67.9	74.6	69.2	47.4	79.5	42.6	12.1	73.7	31.0	18.1
Progression Factor	1.00	1.00	1.00	0.93	1.09	1.06	1.12	1.10	0.97	1.31	0.56	0.41
Incremental Delay, d2	9.4	6.8	3.0	29.0	4.1	0.4	16.9	7.6	0.0	8.3	1.5	0.1
Delay (s)	90.6	87.5	70.9	98.2	79.1	50.6	105.8	54.4	11.8	104.9	19.0	7.4
Level of Service	F	F	E	F	E	D	F	D	B	F	B	A
Approach Delay (s)		80.9			74.9			47.9			37.9	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Volume (vph)	188	123	566	261	148	539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	204	134	615	284	161	586
RTOR Reduction (vph)	0	110	0	144	0	0
Lane Group Flow (vph)	204	24	615	140	161	586
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	9.9	9.9	27.2	27.2	6.1	37.3
Effective Green, g (s)	9.9	9.9	27.2	27.2	6.1	37.3
Actuated g/C Ratio	0.18	0.18	0.49	0.49	0.11	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	317	284	918	780	196	1259
v/s Ratio Prot	c0.12		c0.33		c0.09	0.31
v/s Ratio Perm		0.08		0.18		
v/c Ratio	0.64	0.08	0.67	0.18	0.82	0.47
Uniform Delay, d1	21.0	18.9	10.6	7.8	24.0	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.1	1.9	0.1	23.3	0.3
Delay (s)	25.4	19.0	12.5	7.9	47.3	4.5
Level of Service	C	B	B	A	D	A
Approach Delay (s)	22.9		11.0			13.7
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1782	1583		1780	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.70	1.00		0.51	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1312	1583		944	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	70	7	90	39	3	13	80	2253	30	12	2077	117
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)	76	8	98	42	3	14	87	2449	33	13	2258	127
RTOR Reduction (vph)	0	0	89	0	0	13	0	0	5	0	0	20
Lane Group Flow (vph)	0	84	9	0	45	1	87	2449	28	13	2258	107
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		15.8	15.8		15.8	15.8	13.1	150.5	150.5	1.7	139.1	139.1
Effective Green, g (s)		15.8	15.8		15.8	15.8	13.1	150.5	150.5	1.7	139.1	139.1
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.07	0.84	0.84	0.01	0.77	0.77
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		115	139		83	139	129	2959	1324	17	2735	1223
v/s Ratio Prot							c0.05	c0.69		0.01	0.64	
v/s Ratio Perm		c0.06	0.06		0.05	0.01			0.02			0.08
v/c Ratio		0.73	0.06		0.54	0.01	0.67	0.83	0.02	0.76	0.83	0.09
Uniform Delay, d1		80.0	75.3		78.6	75.0	81.4	7.8	2.5	89.0	12.8	5.0
Progression Factor		1.00	1.00		1.00	1.00	0.93	0.61	1.05	0.93	0.79	1.34
Incremental Delay, d2		21.0	0.2		7.1	0.0	8.2	1.7	0.0	71.7	1.7	0.1
Delay (s)		101.1	75.5		85.7	75.0	83.7	6.6	2.6	154.1	11.8	6.7
Level of Service		F	E		F	E	F	A	A	F	B	A
Approach Delay (s)		87.3			83.1			9.1			12.3	
Approach LOS		F			F			A			B	

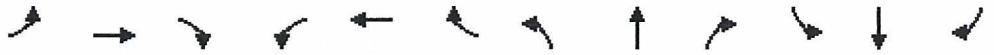
Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	378	251	244	1856	1627	525
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	273	265	2017	1768	571
RTOR Reduction (vph)	0	148	0	0	0	132
Lane Group Flow (vph)	411	125	265	2017	1768	439
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	43.6	43.6	28.4	128.4	96.0	96.0
Effective Green, g (s)	43.6	43.6	28.4	128.4	96.0	96.0
Actuated g/C Ratio	0.24	0.24	0.16	0.71	0.53	0.53
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	383	279	2524	1887	844
v/s Ratio Prot	c0.23		c0.15	0.57	c0.50	
v/s Ratio Perm		0.17				0.36
v/c Ratio	0.96	0.33	0.95	0.80	0.94	0.52
Uniform Delay, d1	67.3	56.1	75.1	17.2	39.2	27.1
Progression Factor	1.00	1.00	1.00	1.00	0.70	0.33
Incremental Delay, d2	32.4	0.5	39.9	2.8	6.6	1.3
Delay (s)	99.7	56.6	115.0	20.0	34.0	10.3
Level of Service	F	E	F	B	C	B
Approach Delay (s)	82.5			31.0	28.2	
Approach LOS	F			C	C	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97					1.00
Frt	1.00	1.00	0.85		1.00		1.00					0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95					1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433					1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95					1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433					1583
Volume (vph)	413	139	314	0	408	0	408	0	0	0	0	195
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)	449	151	341	0	443	0	443	0	0	0	0	212
RTOR Reduction (vph)	0	0	204	0	0	0	0	0	0	0	0	151
Lane Group Flow (vph)	449	151	137	0	443	0	443	0	0	0	0	61
Turn Type	Prot		Perm	Prot			Prot			Perm		Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases			4							6		6
Actuated Green, G (s)	16.4	36.2	36.2		15.8		16.1					25.7
Effective Green, g (s)	16.4	36.2	36.2		15.8		16.1					25.7
Actuated g/C Ratio	0.18	0.40	0.40		0.18		0.18					0.29
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0					3.0
Lane Grp Cap (vph)	626	1423	637		621		614					452
v/s Ratio Prot	c0.13	0.04			c0.13		c0.13					
v/s Ratio Perm			0.22									0.13
v/c Ratio	0.72	0.11	0.22		0.71		0.72					0.13
Uniform Delay, d1	34.6	16.8	17.6		35.0		34.8					23.9
Progression Factor	1.27	1.16	8.31		1.00		1.00					1.00
Incremental Delay, d2	3.3	0.0	0.1		3.9		4.2					0.6
Delay (s)	47.4	19.5	146.4		38.8		39.0					24.5
Level of Service	D	B	F		D		D					C
Approach Delay (s)		78.8			38.8			39.0			24.5	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM Average Control Delay	55.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.0%	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												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	322	17	42	312	101	10	8	36	123	10	14
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)	40	350	18	46	339	110	11	9	39	134	11	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	449			368			891	980	359	959	934	394
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	389			368			879	978	359	955	927	328
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			95	96	94	28	95	98
cM capacity (veh/h)	1055			1190			214	209	685	185	224	643

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	40	368	46	449	11	48	134	26
Volume Left	40	0	46	0	11	0	134	0
Volume Right	0	18	0	110	0	39	0	15
cSH	1055	1700	1190	1700	214	485	185	361
Volume to Capacity	0.04	0.22	0.04	0.26	0.05	0.10	0.72	0.07
Queue Length 95th (ft)	3	0	3	0	4	8	114	6
Control Delay (s)	8.5	0.0	8.1	0.0	22.7	13.2	63.2	15.7
Lane LOS	A		A		C	B	F	C
Approach Delay (s)	0.8		0.8		15.0		55.5	
Approach LOS					B		F	

Intersection Summary				
Average Delay	9.3			
Intersection Capacity Utilization	49.4%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	84	369	16	2	333	6	2	1	3	3	1	61
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)	91	401	17	2	362	7	2	1	3	3	1	66
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	368			418			1026	965	410	957	971	365
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	352			418			1026	964	410	956	970	349
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			99	100	99	98	100	90
cM capacity (veh/h)	1176			1141			175	229	642	216	227	677

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	91	418	2	368	7	71
Volume Left	91	0	2	0	2	3
Volume Right	0	17	0	7	3	66
cSH	1176	1700	1141	1700	293	600
Volume to Capacity	0.08	0.25	0.00	0.22	0.02	0.12
Queue Length 95th (ft)	6	0	0	0	2	10
Control Delay (s)	8.3	0.0	8.2	0.0	17.5	11.8
Lane LOS	A		A		C	B
Approach Delay (s)	1.5		0.0		17.5	11.8
Approach LOS					C	B

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	37.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	864	335	0	1274	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	939	364	0	1385	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	305			296		
pX, platoon unblocked			0.98		0.90	0.98
vC, conflicting volume			1303		1632	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1287		1516	434
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			523		99	557

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	470	470	364	692	692	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	364	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.28	0.28	0.21	0.41	0.41	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	864	1011	0	0	263
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	939	1099	0	0	286
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		375	226			
pX, platoon unblocked	0.89				0.90	0.89
vC, conflicting volume	1099				1568	549
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	985				1467	367
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	49
cM capacity (veh/h)	619				106	560

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	470	470	549	549	0	286
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	286
cSH	1700	1700	1700	1700	1700	560
Volume to Capacity	0.28	0.28	0.32	0.32	0.00	0.51
Queue Length 95th (ft)	0	0	0	0	0	72
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	18.0
Lane LOS						C
Approach Delay (s)	0.0		0.0			18.0
Approach LOS						C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	20	118	0	40	368	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	128	0	43	400	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	512					
pX, platoon unblocked						
vC, conflicting volume			150		43	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			150		43	22
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		58	100
cM capacity (veh/h)			1429		962	1050

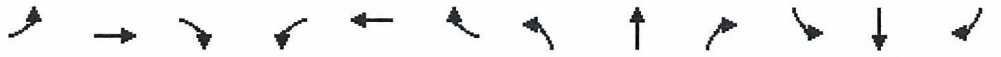
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	22	128	0	22	22	400	0
Volume Left	0	0	0	0	0	400	0
Volume Right	0	128	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	962	1700
Volume to Capacity	0.01	0.08	0.00	0.01	0.01	0.42	0.00
Queue Length 95th (ft)	0	0	0	0	0	52	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.4	0.0
Lane LOS						B	A
Approach Delay (s)	0.0		0.0			11.4	
Approach LOS						B	

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	20	0	0	40	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	22	0	0	43	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	712					
pX, platoon unblocked						
vC, conflicting volume			22		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			22		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1594		1023	1085

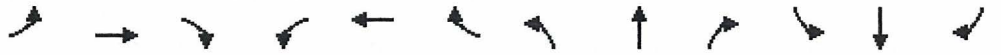
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	22	0	43
Volume Left	0	0	43
Volume Right	22	0	0
cSH	1700	1700	1023
Volume to Capacity	0.01	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	8.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		



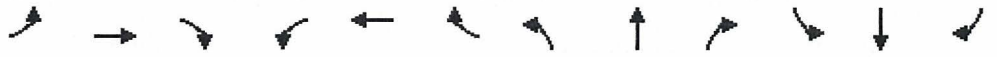
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	181	45	196	126	62	37	92	1517	156	95	1616	110
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)	197	49	213	137	67	40	100	1649	170	103	1757	120
RTOR Reduction (vph)	0	0	130	0	0	36	0	0	51	0	0	34
Lane Group Flow (vph)	197	49	83	137	67	4	100	1649	119	103	1757	86
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Actuated Green, G (s)	19.0	19.0	19.0	13.8	13.8	13.8	10.1	79.7	79.7	11.0	80.6	80.6
Effective Green, g (s)	20.0	20.0	20.0	14.8	14.8	14.8	11.1	80.7	80.7	12.0	81.6	81.6
Actuated g/C Ratio	0.14	0.14	0.14	0.10	0.10	0.10	0.08	0.56	0.56	0.08	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.5	3.5	3.5	3.0	3.0	3.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	247	260	221	183	192	163	137	1990	890	148	2012	900
v/s Ratio Prot	0.11	0.03		c0.08	0.04		0.06	0.47		c0.06	c0.50	
v/s Ratio Perm			0.13			0.03			0.11			0.08
v/c Ratio	0.80	0.19	0.38	0.75	0.35	0.03	0.73	0.83	0.13	0.70	0.87	0.10
Uniform Delay, d1	59.8	54.6	56.1	62.5	59.9	57.9	64.7	25.7	14.9	64.0	26.5	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.7	0.4	1.3	15.4	1.1	0.1	15.2	3.4	0.1	10.9	4.9	0.1
Delay (s)	76.4	55.0	57.3	77.9	61.0	57.9	79.9	29.1	15.0	74.9	31.4	14.2
Level of Service	E	D	E	E	E	E	E	C	B	E	C	B
Approach Delay (s)		65.3			70.0			30.5			32.6	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	143.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.70	1.00	1.00	0.72	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1313	1863	1583	2599	1863	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	60	53	115	262	74	132	79	1451	206	249	1632	49
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	58	125	285	80	143	86	1577	224	271	1774	53
RTOR Reduction (vph)	0	0	106	0	0	121	0	0	112	0	0	24
Lane Group Flow (vph)	65	58	19	285	80	22	86	1577	112	271	1774	29
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Actuated Green, G (s)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	25.0	25.0	5.0	27.0	27.0
Effective Green, g (s)	8.0	8.0	8.0	8.0	8.0	8.0	4.0	26.0	26.0	6.0	28.0	28.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.50	0.50	0.12	0.54	0.54
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	202	287	244	400	287	244	136	1770	792	396	1906	852
v/s Ratio Prot		0.03			0.04		0.05	0.45		c0.08	c0.50	
v/s Ratio Perm	0.05		0.08	c0.11		0.09			0.14			0.03
v/c Ratio	0.32	0.20	0.08	0.71	0.28	0.09	0.63	0.89	0.14	0.68	0.93	0.03
Uniform Delay, d1	19.6	19.2	18.8	20.9	19.4	18.9	23.3	11.7	7.0	22.1	11.1	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.5	0.2	6.3	0.7	0.2	6.9	6.5	0.2	3.9	9.1	0.0
Delay (s)	20.8	19.7	19.0	27.2	20.2	19.1	30.1	18.2	7.2	26.0	20.2	5.7
Level of Service	C	B	B	C	C	B	C	B	A	C	C	A
Approach Delay (s)		19.7			23.8			17.5			20.6	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	2787		1667		3433	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1681	2787		1667		3433	3538		1770	3539	1583
Volume (vph)	186	0	508	1	0	2	446	1190	4	6	1396	157
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)	202	0	552	1	0	2	485	1293	4	7	1517	171
RTOR Reduction (vph)	0	0	164	0	2	0	0	0	0	0	0	82
Lane Group Flow (vph)	101	101	388	0	1	0	485	1297	0	7	1517	89
Turn Type	Split		custom	Split			Prot			Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			5 8									6
Actuated Green, G (s)	7.1	7.1	29.0		0.8		15.9	52.8		0.8	37.7	37.7
Effective Green, g (s)	9.1	9.1	29.0		2.8		15.9	54.8		0.8	39.7	39.7
Actuated g/C Ratio	0.11	0.11	0.35		0.03		0.19	0.66		0.01	0.48	0.48
Clearance Time (s)	6.0	6.0			6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	183	183	968		56		654	2322		17	1683	753
v/s Ratio Prot	0.06	0.06			c0.00		c0.14	0.37		0.00	c0.43	
v/s Ratio Perm			0.20									0.11
v/c Ratio	0.55	0.55	0.40		0.02		0.74	0.56		0.41	0.90	0.12
Uniform Delay, d1	35.3	35.3	20.7		39.0		31.9	7.8		41.1	20.1	12.2
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.6	3.6	0.1		0.1		4.0	0.4		5.8	7.4	0.1
Delay (s)	38.8	38.8	20.8		39.2		35.8	8.2		46.9	27.5	12.3
Level of Service	D	D	C		D		D	A		D	C	B
Approach Delay (s)		25.6			39.2			15.7			26.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	3539	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	3539	3433	1583
Volume (vph)	468	479	129	456	373	141
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	509	521	140	496	405	153
RTOR Reduction (vph)	0	276	0	0	0	0
Lane Group Flow (vph)	509	245	140	496	405	153
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	21.9	21.9	5.8	31.7	7.1	49.8
Effective Green, g (s)	23.4	23.4	5.8	33.2	8.6	49.8
Actuated g/C Ratio	0.47	0.47	0.12	0.67	0.17	1.00
Clearance Time (s)	5.5	5.5	4.0	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	2.0	5.0	2.0	
Lane Grp Cap (vph)	875	744	206	2359	593	1583
v/s Ratio Prot	0.27		c0.08	0.14	c0.12	
v/s Ratio Perm		0.33				0.10
v/c Ratio	0.58	0.33	0.68	0.21	0.68	0.10
Uniform Delay, d1	9.6	8.3	21.1	3.2	19.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.5	6.8	0.1	2.6	0.0
Delay (s)	11.2	8.8	27.9	3.3	21.9	0.0
Level of Service	B	A	C	A	C	A
Approach Delay (s)	10.0			8.7	15.9	
Approach LOS	A			A	B	

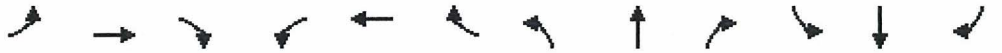
Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	0.88	1.00	0.95	0.88	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	1863	2787	1770	3539	2787	3433	3539	1583
Volume (vph)	98	251	178	658	227	652	135	966	685	714	1070	145
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)	107	273	193	715	247	709	147	1050	745	776	1163	158
RTOR Reduction (vph)	0	0	175	0	0	541	0	0	359	0	0	66
Lane Group Flow (vph)	107	273	18	715	247	168	147	1050	386	776	1163	92
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.0	13.6	13.6	31.8	33.4	33.4	16.6	49.7	49.7	34.9	68.0	68.0
Effective Green, g (s)	12.0	13.6	13.6	31.8	33.4	33.4	16.6	49.7	49.7	34.9	68.0	68.0
Actuated g/C Ratio	0.08	0.09	0.09	0.22	0.23	0.23	0.11	0.34	0.34	0.24	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	330	147	748	426	638	201	1205	949	821	1648	737
v/s Ratio Prot	0.06	0.08		c0.21	0.13		0.08	c0.30		c0.23	0.33	
v/s Ratio Perm			0.12			0.25			0.27			0.10
v/c Ratio	0.74	0.83	0.12	0.96	0.58	0.26	0.73	0.87	0.41	0.95	0.71	0.13
Uniform Delay, d1	65.5	65.0	60.7	56.4	50.1	46.2	62.5	45.2	36.9	54.6	31.0	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.7	15.5	0.4	22.5	1.9	0.2	12.8	7.1	0.3	19.2	1.4	0.1
Delay (s)	83.2	80.6	61.1	78.9	52.0	46.4	75.4	52.3	37.2	73.8	32.4	22.2
Level of Service	F	F	E	E	D	D	E	D	D	E	C	C
Approach Delay (s)		74.5			61.1			48.2			47.0	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	53.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.33	1.00
Satd. Flow (perm)	1770	1583	1863	1583	609	1863
Volume (vph)	234	128	559	259	159	475
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	254	139	608	282	173	516
RTOR Reduction (vph)	0	103	0	127	0	0
Lane Group Flow (vph)	254	36	608	155	173	516
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	11.1	11.1	23.2	23.2	23.2	23.2
Effective Green, g (s)	11.1	11.1	23.2	23.2	23.2	23.2
Actuated g/C Ratio	0.26	0.26	0.55	0.55	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	464	415	1022	868	334	1022
v/s Ratio Prot	c0.14		c0.33			0.28
v/s Ratio Perm		0.09		0.18	0.28	
v/c Ratio	0.55	0.09	0.59	0.18	0.52	0.50
Uniform Delay, d1	13.4	11.8	6.4	4.8	6.0	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.1	0.9	0.1	1.4	0.4
Delay (s)	14.8	11.9	7.3	4.9	7.4	6.4
Level of Service	B	B	A	A	A	A
Approach Delay (s)	13.7		6.6			6.6
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	42.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00				1.00	0.95			0.95	1.00
Frt		1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)		1770	1583				1770	3539			3539	1583
Flt Permitted		0.76	1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)		1410	1583				1770	3539			3539	1583
Volume (vph)	92	0	81	0	0	0	35	1790	0	0	1693	110
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)	100	0	88	0	0	0	38	1946	0	0	1840	120
RTOR Reduction (vph)	0	0	77	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	100	11	0	0	0	38	1946	0	0	1840	85
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		10.4	10.4				2.6	66.7			60.1	60.1
Effective Green, g (s)		10.4	10.4				2.6	66.7			60.1	60.1
Actuated g/C Ratio		0.12	0.12				0.03	0.78			0.71	0.71
Clearance Time (s)		4.0	4.0				4.0	4.0			4.0	4.0
Vehicle Extension (s)		3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		172	193				54	2774			2499	1118
v/s Ratio Prot							0.02	c0.55			c0.52	
v/s Ratio Perm		c0.07	0.06									0.08
v/c Ratio		0.58	0.06				0.70	0.70			0.74	0.08
Uniform Delay, d1		35.3	33.0				40.9	4.4			7.7	3.9
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		4.9	0.1				34.1	0.8			1.2	0.0
Delay (s)		40.2	33.1				74.9	5.2			8.8	3.9
Level of Service		D	C				E	A			A	A
Approach Delay (s)		36.9			0.0			6.6			8.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Volume (vph)	452	255	214	1478	1393	526
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	491	277	233	1607	1514	572
RTOR Reduction (vph)	0	186	0	0	0	237
Lane Group Flow (vph)	491	91	233	1607	1514	335
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	36.0	36.0	17.0	76.0	55.0	55.0
Effective Green, g (s)	36.0	36.0	17.0	76.0	55.0	55.0
Actuated g/C Ratio	0.30	0.30	0.14	0.63	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	531	475	251	2241	1622	726
v/s Ratio Prot	c0.28		c0.13	0.45	c0.43	
v/s Ratio Perm		0.17				0.36
v/c Ratio	0.92	0.19	0.93	0.72	0.93	0.46
Uniform Delay, d1	40.7	31.2	50.9	14.8	30.8	22.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.3	0.9	40.9	2.0	11.3	2.1
Delay (s)	64.9	32.1	91.8	16.8	42.1	24.4
Level of Service	E	C	F	B	D	C
Approach Delay (s)	53.1			26.3	37.2	
Approach LOS	D			C	D	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97					1.00
Frt	1.00	1.00	0.85		1.00		1.00					0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95					1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433					1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95					1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433					1583
Volume (vph)	474	207	467	0	548	0	548	0	0	0	0	192
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)	515	225	508	0	596	0	596	0	0	0	0	209
RTOR Reduction (vph)	0	0	295	0	0	0	0	0	0	0	0	161
Lane Group Flow (vph)	515	225	213	0	596	0	596	0	0	0	0	48
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.0	31.4	31.4		15.4		14.3					17.3
Effective Green, g (s)	12.0	31.4	31.4		15.4		14.3					17.3
Actuated g/C Ratio	0.16	0.42	0.42		0.21		0.19					0.23
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0					4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0					3.0
Lane Grp Cap (vph)	549	1482	663		727		655					365
v/s Ratio Prot	c0.15	0.06			0.17		c0.17					
v/s Ratio Perm			0.32									0.13
v/c Ratio	0.94	0.15	0.32		0.82		0.91					0.13
Uniform Delay, d1	31.1	13.5	14.6		28.5		29.7					22.9
Progression Factor	1.00	1.00	1.00		1.00		1.00					1.00
Incremental Delay, d2	23.8	0.0	0.3		7.2		16.6					0.7
Delay (s)	54.9	13.6	14.9		35.7		46.3					23.6
Level of Service	D	B	B		D		D					C
Approach Delay (s)		31.2			35.7			46.3			23.6	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	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												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	377	12	27	361	85	10	9	30	122	5	17
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)	26	410	13	29	392	92	11	10	33	133	5	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		817			333							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	485			423			941	1012	416	997	972	439
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	424			423			934	1013	416	996	969	372
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			95	95	95	24	97	97
cM capacity (veh/h)	1015			1136			201	203	636	175	215	602

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	423	29	485	11	42	133	24
Volume Left	26	0	29	0	11	0	133	0
Volume Right	0	13	0	92	0	33	0	18
cSH	1015	1700	1136	1700	201	426	175	427
Volume to Capacity	0.03	0.25	0.03	0.29	0.05	0.10	0.76	0.06
Queue Length 95th (ft)	2	0	2	0	4	8	122	4
Control Delay (s)	8.6	0.0	8.3	0.0	23.9	14.4	70.8	13.9
Lane LOS	A		A		C	B	F	B
Approach Delay (s)	0.5		0.5		16.3		62.1	
Approach LOS					C		F	

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	44.3%	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		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	73	415	10	6	386	8	5	4	7	7	3	95
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)	79	451	11	7	420	9	5	4	8	8	3	103
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		370			780							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	428			462			1153	1057	457	1057	1058	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	414			462			1156	1058	457	1058	1059	410
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			99			96	98	99	96	98	84
cM capacity (veh/h)	1117			1099			131	203	604	181	202	626

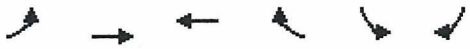
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	79	462	7	428	17	114
Volume Left	79	0	7	0	5	8
Volume Right	0	11	0	9	8	103
cSH	1117	1700	1099	1700	231	512
Volume to Capacity	0.07	0.27	0.01	0.25	0.08	0.22
Queue Length 95th (ft)	6	0	0	0	6	21
Control Delay (s)	8.5	0.0	8.3	0.0	21.9	14.0
Lane LOS	A		A		C	B
Approach Delay (s)	1.2		0.1		21.9	14.0
Approach LOS					C	B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1149	501	0	1540	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1249	545	0	1674	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	305			296		
pX, platoon unblocked			0.96		0.85	0.96
vC, conflicting volume			1793		2086	624
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1786		1977	575
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			331		46	445

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	624	624	545	837	837	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	545	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.37	0.32	0.49	0.49	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↱		↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1149	1288	0	0	252
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1249	1400	0	0	274
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		435	166			
pX, platoon unblocked	0.83				0.84	0.83
vC, conflicting volume	1400				2024	700
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1276				1969	432
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	42
cM capacity (veh/h)	448				46	474

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	624	624	700	700	0	274
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	274
cSH	1700	1700	1700	1700	1700	474
Volume to Capacity	0.37	0.37	0.41	0.41	0.00	0.58
Queue Length 95th (ft)	0	0	0	0	0	90
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	22.5
Lane LOS						C
Approach Delay (s)	0.0		0.0			22.5
Approach LOS						C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	31	176	0	62	486	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	191	0	67	528	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	479					
pX, platoon unblocked						
vC, conflicting volume			225		67	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		67	34
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		43	100
cM capacity (veh/h)			1341		930	1032

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	34	191	0	34	34	528
Volume Left	0	0	0	0	0	528
Volume Right	0	191	0	0	0	0
cSH	1700	1700	1700	1700	1700	930
Volume to Capacity	0.02	0.11	0.00	0.02	0.02	0.57
Queue Length 95th (ft)	0	0	0	0	0	92
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.8
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.8
Approach LOS						B

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	31	0	0	62	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	0	0	67	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	629					
pX, platoon unblocked						
vC, conflicting volume			34		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	100
cM capacity (veh/h)			1578		1023	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	0	67
Volume Left	0	0	67
Volume Right	34	0	0
cSH	1700	1700	1023
Volume to Capacity	0.02	0.00	0.07
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay		5.8	
Intersection Capacity Utilization		6.8%	ICU Level of Service A
Analysis Period (min)		15	

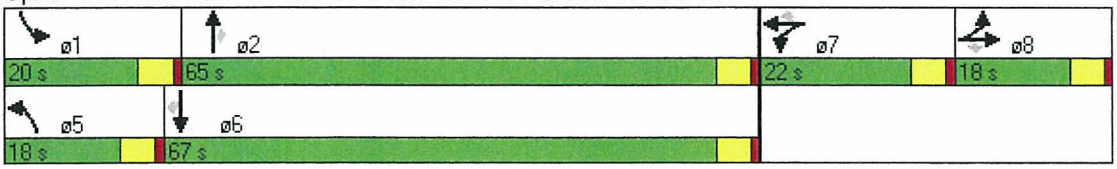
Appendix E
Queue Analysis Worksheets for 2018 Background Plus Project Conditions (Signalized Intersections Only)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	88	96	211	40	177	38	1280	40	167	1766	81
Lane Group Flow (vph)	103	96	104	229	43	192	41	1391	43	182	1920	88
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Detector Phases	8	8	8	7	7	7	5	2	2	1	6	6
Minimum Initial (s)	15.0	15.0	15.0	10.0	10.0	10.0	10.0	25.0	25.0	13.0	22.0	22.0
Minimum Split (s)	22.0	22.0	22.0	25.0	25.0	25.0	18.0	58.0	58.0	20.0	60.0	60.0
Total Split (s)	18.0	18.0	18.0	22.0	22.0	22.0	18.0	65.0	65.0	20.0	67.0	67.0
Total Split (%)	14.4%	14.4%	14.4%	17.6%	17.6%	17.6%	14.4%	52.0%	52.0%	16.0%	53.6%	53.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.52	0.46	0.39	0.90	0.16	0.49	0.26	0.80	0.05	0.82	0.98	0.10
Control Delay	62.5	59.7	13.9	88.3	48.7	11.1	56.2	31.1	6.6	84.1	38.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	59.7	13.9	88.3	48.7	11.1	56.2	31.1	6.6	84.1	38.4	3.0
Queue Length 50th (ft)	80	74	0	185	31	0	32	486	3	156	~893	3
Queue Length 95th (ft)	141	131	54	#336	67	68	69	583	23	#272	#1001	m13
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	198	209	270	255	268	392	198	1741	797	227	1955	900
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.46	0.39	0.90	0.16	0.49	0.21	0.80	0.05	0.80	0.98	0.10

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY

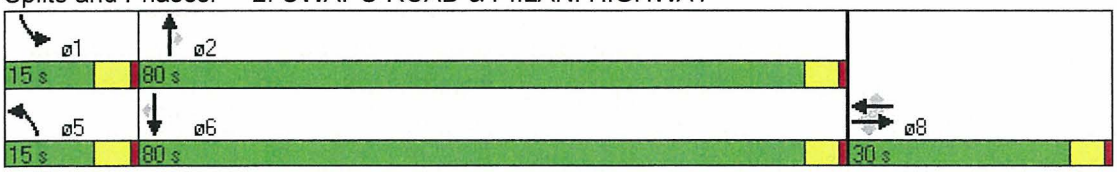


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	39	123	253	68	199	30	1441	104	130	1400	21
Lane Group Flow (vph)	150	42	134	275	74	216	33	1566	113	141	1522	23
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Detector Phases	8	8	8	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	25.0	25.0	10.0	25.0	25.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	15.0	80.0	80.0	15.0	80.0	80.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	15.0	80.0	80.0	15.0	80.0	80.0
Total Split (%)	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	12.0%	64.0%	64.0%	12.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
v/c Ratio	0.65	0.13	0.34	0.59	0.22	0.53	0.21	0.69	0.11	0.47	0.63	0.02
Control Delay	55.0	41.9	8.8	49.8	43.8	16.9	35.9	27.3	9.4	52.0	24.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	41.9	8.8	49.8	43.8	16.9	35.9	27.3	9.4	52.0	24.7	6.5
Queue Length 50th (ft)	111	28	0	103	51	39	26	477	19	48	631	5
Queue Length 95th (ft)	182	60	53	147	94	115	m35	577	m45	m73	753	m10
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	272	388	435	549	388	454	156	2260	1051	302	2430	1094
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.11	0.31	0.50	0.19	0.48	0.21	0.69	0.11	0.47	0.63	0.02

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 50 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY

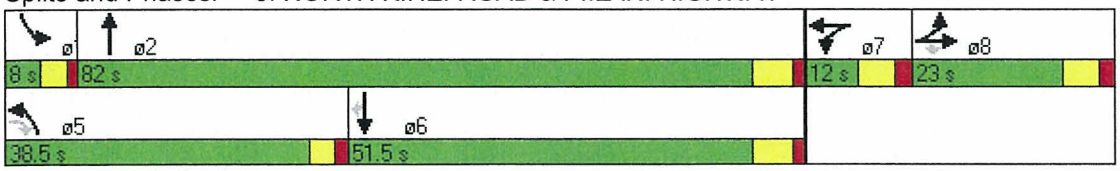


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	211	20	381	2	461	1349	3	1235	110
Lane Group Flow (vph)	122	129	414	21	501	1475	3	1342	120
Turn Type	Split		custom		Prot		Prot		Perm
Protected Phases	8	8		7	5	2	1	6	
Permitted Phases			5 8						6
Detector Phases	8	8	5 8	7	5	2	1	6	6
Minimum Initial (s)	7.0	7.0		5.0	10.0	20.0	4.0	20.0	20.0
Minimum Split (s)	13.0	13.0		11.0	14.5	26.0	8.0	26.0	26.0
Total Split (s)	23.0	23.0	61.5	12.0	38.5	82.0	8.0	51.5	51.5
Total Split (%)	18.4%	18.4%	49.2%	9.6%	30.8%	65.6%	6.4%	41.2%	41.2%
Yellow Time (s)	4.0	4.0		4.0	3.0	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	1.5	1.5	1.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None		None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.56	0.59	0.35	0.19	0.67	0.57	0.05	0.76	0.14
Control Delay	64.1	64.8	19.7	51.6	44.5	16.5	60.7	31.3	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	64.8	19.7	51.6	44.5	16.5	60.7	31.3	7.9
Queue Length 50th (ft)	106	112	54	13	217	405	2	507	15
Queue Length 95th (ft)	174	182	176	41	272	650	13	623	53
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	256	258	1310	116	948	2607	57	1767	834
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.50	0.32	0.18	0.53	0.57	0.05	0.76	0.14

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 40 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

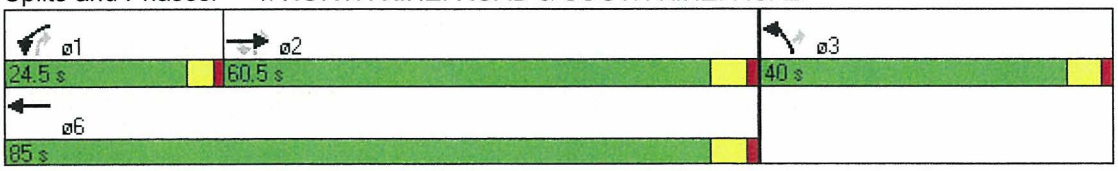


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	365	300	81	518	452	185
Lane Group Flow (vph)	397	326	88	563	491	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Detector Phases	2	2	1	6	3	1 2 3
Minimum Initial (s)	10.0	10.0	5.0	10.0	7.0	
Minimum Split (s)	15.5	15.5	9.0	15.5	12.5	
Total Split (s)	60.5	60.5	24.5	85.0	40.0	125.0
Total Split (%)	48.4%	48.4%	19.6%	68.0%	32.0%	100.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.0	1.5	1.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	Min	C-Min	Min	
v/c Ratio	0.34	0.29	0.59	0.21	0.76	0.13
Control Delay	13.1	2.1	63.6	1.7	49.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	2.1	63.6	1.7	49.4	0.2
Queue Length 50th (ft)	141	0	75	19	195	0
Queue Length 95th (ft)	254	43	133	19	239	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1178	1121	290	2649	989	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.29	0.30	0.21	0.50	0.13

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 30 (24%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD



5: KAONOULU STREET & PIILANI HIGHWAY

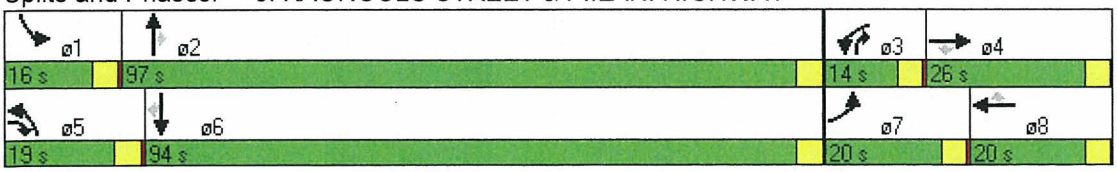
12/24/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	60	242	121	58	95	116	1137	140	89	1741	96
Lane Group Flow (vph)	84	65	263	132	63	103	126	1236	152	97	1892	104
Turn Type	Prot		pm+ov	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	5	3	8	8	5	2	3	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	8.0	20.0	20.0	8.0	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	26.0	19.0	14.0	20.0	20.0	19.0	97.0	14.0	16.0	94.0	94.0
Total Split (%)	13.1%	17.0%	12.4%	9.2%	13.1%	13.1%	12.4%	63.4%	9.2%	10.5%	61.4%	61.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
v/c Ratio	0.60	0.22	0.75	0.51	0.50	0.36	0.62	0.51	0.07	0.45	0.85	0.10
Control Delay	75.3	63.7	64.5	76.0	72.4	12.9	78.5	13.6	0.9	72.4	27.8	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	63.7	64.5	76.0	72.4	12.9	78.5	13.6	0.9	72.4	27.8	5.5
Queue Length 50th (ft)	82	32	230	67	62	0	123	294	0	48	736	13
Queue Length 95th (ft)	139	55	316	105	111	33	#200	429	11	79	974	43
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	185	509	352	261	195	384	204	2423	2225	271	2238	1025
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.13	0.75	0.51	0.32	0.27	0.62	0.51	0.07	0.36	0.85	0.10

Intersection Summary

Cycle Length: 153
Actuated Cycle Length: 153
Offset: 125 (82%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY

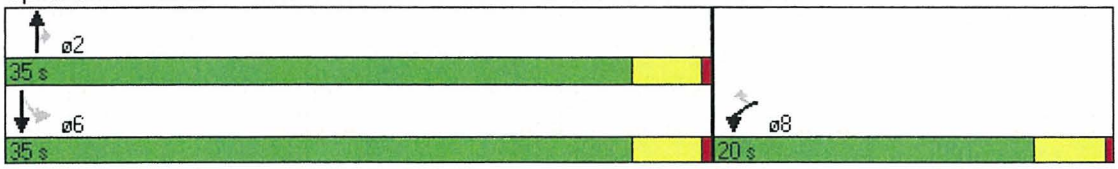


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	143	63	571	137	64	394
Lane Group Flow (vph)	155	68	621	149	70	428
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	35.0	35.0	35.0	35.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
v/c Ratio	0.44	0.19	0.51	0.14	0.18	0.35
Control Delay	14.4	5.5	6.9	1.4	6.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	5.5	6.9	1.4	6.0	5.5
Queue Length 50th (ft)	24	0	67	0	6	40
Queue Length 95th (ft)	81	23	174	16	25	105
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	522	515	1321	1166	409	1321
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.13	0.47	0.13	0.17	0.32

Intersection Summary

Cycle Length: 55
Actuated Cycle Length: 54.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: KAONOULU STREET & SOUTH KIHEI ROAD

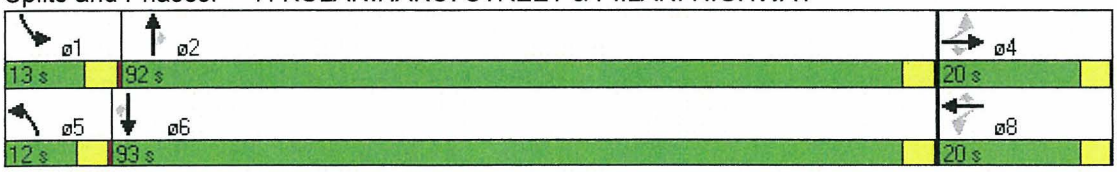


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	35	124	75	6	27	31	1489	137	56	2147	42
Lane Group Flow (vph)	0	73	135	0	89	29	34	1618	149	61	2334	46
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phases	4	4	4	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	12.0	92.0	92.0	13.0	93.0	93.0
Total Split (%)	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	9.6%	73.6%	73.6%	10.4%	74.4%	74.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio		0.45	0.53		0.69	0.15	0.33	0.61	0.12	0.52	0.85	0.04
Control Delay		57.1	21.1		67.3	17.6	75.0	11.3	0.5	68.4	15.7	1.9
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		57.1	21.1		67.3	17.6	75.0	11.3	0.5	68.4	15.7	1.9
Queue Length 50th (ft)		56	25		70	0	28	468	2	48	700	1
Queue Length 95th (ft)		104	88		127	29	m49	574	m3	96	914	12
Internal Link Dist (ft)		212			349			829			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		197	292		158	228	113	2649	1223	129	2740	1235
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.37	0.46		0.56	0.13	0.30	0.61	0.12	0.47	0.85	0.04

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY

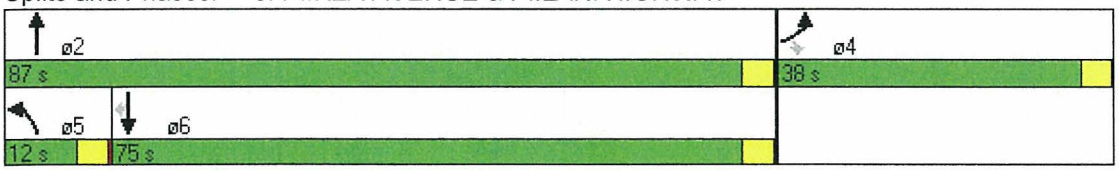


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	326	180	101	1271	1789	454
Lane Group Flow (vph)	354	196	110	1382	1945	493
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phases	4	4	5	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	38.0	38.0	12.0	87.0	75.0	75.0
Total Split (%)	30.4%	30.4%	9.6%	69.6%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.87	0.43	0.71	0.55	0.94	0.46
Control Delay	55.4	17.5	80.9	10.6	25.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	17.5	80.9	10.6	25.1	3.4
Queue Length 50th (ft)	272	50	88	268	534	15
Queue Length 95th (ft)	376	116	#212	358	#960	m67
Internal Link Dist (ft)	652			1058	2861	
Turn Bay Length (ft)						
Base Capacity (vph)	481	517	154	2496	2074	1074
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.38	0.71	0.55	0.94	0.46

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

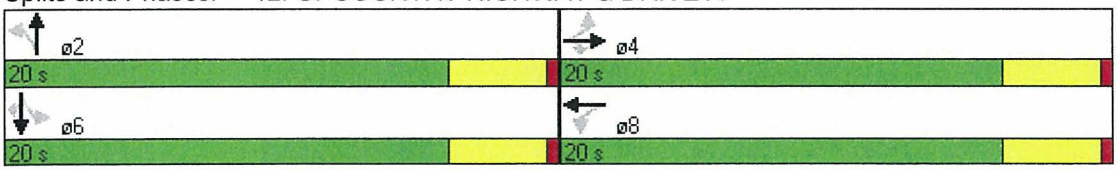
Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	100	30	65	43	72	66	0	16	0	55
Lane Group Flow (vph)	109	33	71	47	140	72	9	0	17	60
Turn Type	Perm		Perm	Perm		Perm		Perm		Perm
Protected Phases		4			8		2		6	
Permitted Phases	4		4	8		2		6		6
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.11	0.02	0.11	0.09	0.10	0.07	0.01		0.03	0.09
Control Delay	8.0	7.4	3.2	8.0	5.1	7.7	0.0		7.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.0	7.4	3.2	8.0	5.1	7.7	0.0		7.6	3.3
Queue Length 50th (ft)	7	2	0	6	5	4	0		2	0
Queue Length 95th (ft)	17	7	15	19	16	12	0		10	14
Internal Link Dist (ft)		86			521		103		80	
Turn Bay Length (ft)										
Base Capacity (vph)	958	1416	676	547	1360	1078	1223		560	669
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.11	0.02	0.11	0.09	0.10	0.07	0.01		0.03	0.09

Intersection Summary
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Pretimed

Splits and Phases: 12: UPCOUNTRY HIGHWAY & DRIVE A

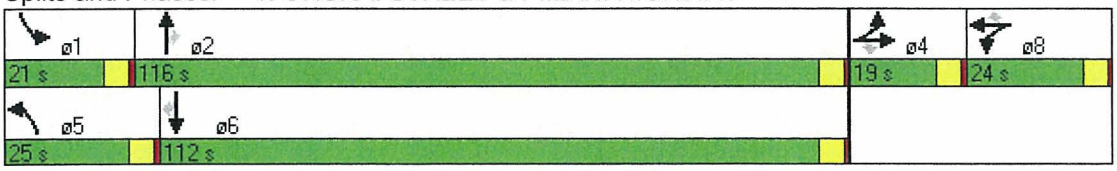


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	76	125	203	66	168	152	1910	56	138	1772	87
Lane Group Flow (vph)	128	83	136	143	150	183	165	2076	61	150	1926	95
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phases	4	4	4	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	10.0	5.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	10.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	19.0	19.0	19.0	24.0	24.0	24.0	25.0	116.0	116.0	21.0	112.0	112.0
Total Split (%)	10.6%	10.6%	10.6%	13.3%	13.3%	13.3%	13.9%	64.4%	64.4%	11.7%	62.2%	62.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.86	0.54	0.53	0.81	0.82	0.61	0.85	0.93	0.06	0.91	0.89	0.10
Control Delay	124.5	92.4	18.5	103.2	104.5	25.0	99.4	19.3	4.0	102.1	39.4	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.5	92.4	18.5	103.2	104.5	25.0	99.4	19.3	4.0	102.1	39.4	14.8
Queue Length 50th (ft)	152	96	0	175	185	35	205	367	4	187	830	37
Queue Length 95th (ft)	#284	161	74	#294	#309	125	m240	441	m10	m#318	1008	m76
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	148	155	257	187	192	310	207	2226	1008	167	2169	991
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.54	0.53	0.76	0.78	0.59	0.80	0.93	0.06	0.90	0.89	0.10

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY

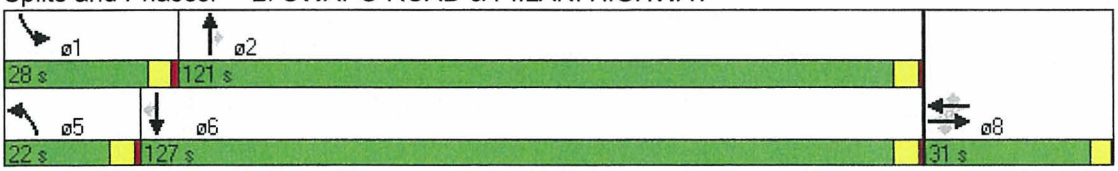


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	60	123	182	76	144	96	1832	201	285	1672	64
Lane Group Flow (vph)	85	65	134	198	83	157	104	1991	218	310	1817	70
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Detector Phases	8	8	8	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	10.0	27.0	27.0	10.0	27.0	27.0
Total Split (s)	31.0	31.0	31.0	31.0	31.0	31.0	22.0	121.0	121.0	28.0	127.0	127.0
Total Split (%)	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	12.2%	67.2%	67.2%	15.6%	70.6%	70.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.64	0.30	0.44	0.71	0.38	0.49	0.68	0.81	0.19	0.76	0.70	0.06
Control Delay	85.0	73.4	12.6	81.7	75.1	12.3	82.0	38.8	9.6	72.0	36.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.0	73.4	12.6	81.7	75.1	12.3	82.0	38.8	9.6	72.0	36.3	8.4
Queue Length 50th (ft)	97	71	0	117	92	0	116	1093	72	171	1112	23
Queue Length 95th (ft)	160	122	67	161	149	72	m128	1168	m101	m205	1186	m34
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	172	279	351	363	279	371	177	2471	1145	458	2588	1171
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.23	0.38	0.55	0.30	0.42	0.59	0.81	0.19	0.68	0.70	0.06

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY

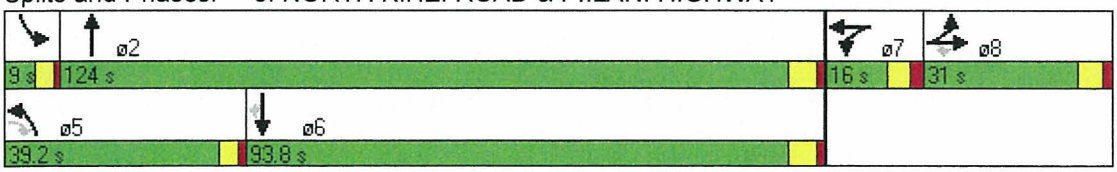


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	369	9	366	12	541	1360	10	1488	179
Lane Group Flow (vph)	201	210	398	97	588	1494	11	1617	195
Turn Type	Split		custom		Prot		Prot		Perm
Protected Phases	8	8		7	5	2	1	6	
Permitted Phases			5 8						6
Detector Phases	8	8	5 8	7	5	2	1	6	6
Minimum Initial (s)	7.0	7.0		5.0	5.0	20.0	5.0	20.0	20.0
Minimum Split (s)	22.0	22.0		11.0	22.5	26.0	9.0	33.0	33.0
Total Split (s)	31.0	31.0	70.2	16.0	39.2	124.0	9.0	93.8	93.8
Total Split (%)	17.2%	17.2%	39.0%	8.9%	21.8%	68.9%	5.0%	52.1%	52.1%
Yellow Time (s)	4.0	4.0		4.0	3.0	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	1.5	1.5	1.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None		None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.83	0.86	0.38	0.75	0.92	0.60	0.22	0.89	0.23
Control Delay	77.0	80.1	32.8	93.3	77.5	16.4	96.5	46.5	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	80.1	32.8	93.3	77.5	16.4	96.5	46.5	12.4
Queue Length 50th (ft)	245	257	189	90	370	416	13	916	58
Queue Length 95th (ft)	#385	#407	240	#185	#450	594	38	1032	113
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	252	254	1083	133	671	2491	49	1826	865
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.83	0.37	0.73	0.88	0.60	0.22	0.89	0.23

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 10 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

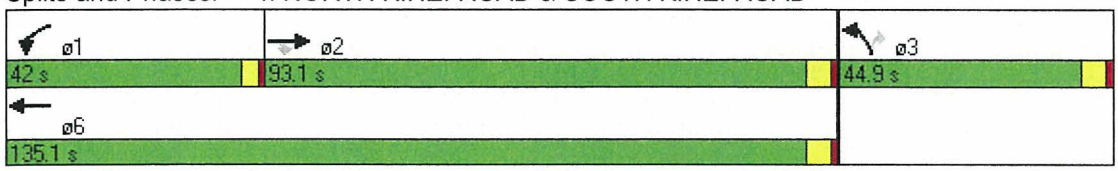


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	556	588	141	485	342	178
Lane Group Flow (vph)	604	639	153	527	372	193
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Detector Phases	2	2	1	6	3	3
Minimum Initial (s)	4.0	4.0	5.0	4.0	4.0	4.0
Minimum Split (s)	30.5	30.5	9.0	21.5	21.5	21.5
Total Split (s)	93.1	93.1	42.0	135.1	44.9	44.9
Total Split (%)	51.7%	51.7%	23.3%	75.1%	24.9%	24.9%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.0	1.5	1.5	1.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
v/c Ratio	0.57	0.58	0.65	0.20	0.48	0.38
Control Delay	28.4	8.9	84.1	1.7	62.7	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	8.9	84.1	1.7	62.7	8.7
Queue Length 50th (ft)	431	112	140	17	198	0
Queue Length 95th (ft)	669	276	m102	m17	255	72
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1067	1104	374	2578	780	509
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.58	0.41	0.20	0.48	0.38

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 30 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

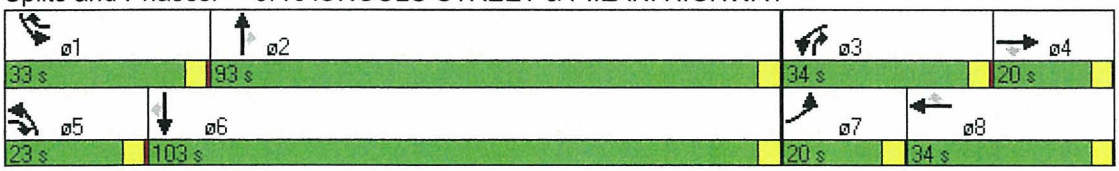


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	183	196	528	200	449	140	1589	507	392	1517	120
Lane Group Flow (vph)	80	193	206	556	211	473	147	1673	534	413	1597	126
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		Perm
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	5	3	8	1	5	2	3	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	8.0	20.0	8.0	8.0	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	23.0	34.0	34.0	33.0	23.0	93.0	34.0	33.0	103.0	103.0
Total Split (%)	11.1%	11.1%	12.8%	18.9%	18.9%	18.3%	12.8%	51.7%	18.9%	18.3%	57.2%	57.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
v/c Ratio	0.63	0.69	0.62	0.97	0.65	0.45	0.83	0.93	0.27	0.76	0.80	0.14
Control Delay	92.1	89.2	66.5	99.0	84.7	37.6	103.8	52.1	8.7	101.0	19.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.1	89.2	66.5	99.0	84.7	37.6	103.8	52.1	8.7	101.0	19.5	3.4
Queue Length 50th (ft)	93	118	201	352	252	197	180	1097	83	259	538	6
Queue Length 95th (ft)	155	166	298	#468	351	267	m221	#1183	179	m296	575	m10
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	157	315	344	572	325	1068	189	1797	1965	556	1999	926
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.61	0.60	0.97	0.65	0.44	0.78	0.93	0.27	0.74	0.80	0.14

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY

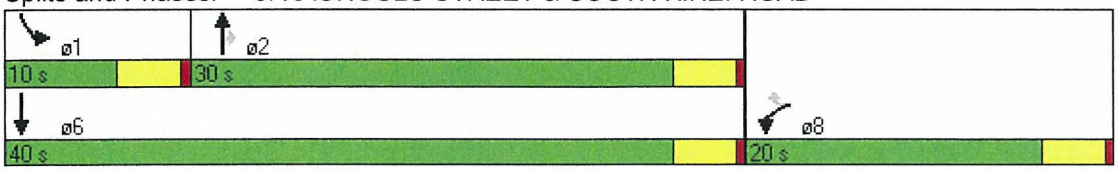


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	188	123	566	261	148	539
Lane Group Flow (vph)	204	134	615	284	161	586
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phases	8	8	2	2	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	10.0	40.0
Total Split (%)	33.3%	33.3%	50.0%	50.0%	16.7%	66.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Min	Min	None	Min
v/c Ratio	0.57	0.32	0.66	0.30	0.82	0.45
Control Delay	21.6	5.5	16.5	2.6	60.0	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	5.5	16.5	2.6	60.0	6.7
Queue Length 50th (ft)	59	0	149	0	52	80
Queue Length 95th (ft)	114	34	#338	36	#158	178
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	469	518	968	959	197	1326
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.26	0.64	0.30	0.82	0.44

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 54.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: KAONOULU STREET & SOUTH KIHEI ROAD

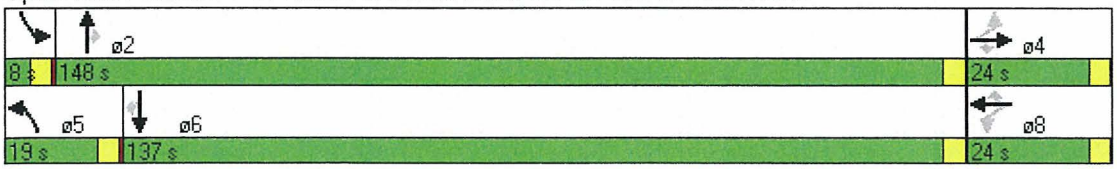


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	7	90	39	3	13	80	2253	30	12	2077	117
Lane Group Flow (vph)	0	84	98	0	45	14	87	2449	33	13	2258	127
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phases	4	4	4	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	19.0	148.0	148.0	8.0	137.0	137.0
Total Split (%)	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	10.6%	82.2%	82.2%	4.4%	76.1%	76.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio		0.72	0.43		0.45	0.09	0.67	0.81	0.02	0.25	0.83	0.10
Control Delay		94.5	16.0		84.9	28.8	85.2	6.8	1.4	86.6	13.1	2.9
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		94.5	16.0		84.9	28.8	85.2	6.8	1.4	86.6	13.1	2.9
Queue Length 50th (ft)		98	0		51	0	103	333	0	15	372	10
Queue Length 95th (ft)		162	62		98	26	m128	603	m4	m20	m641	m15
Internal Link Dist (ft)		212			261			1847			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		147	263		125	188	149	3006	1349	52	2735	1244
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.57	0.37		0.36	0.07	0.58	0.81	0.02	0.25	0.83	0.10

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 40 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY

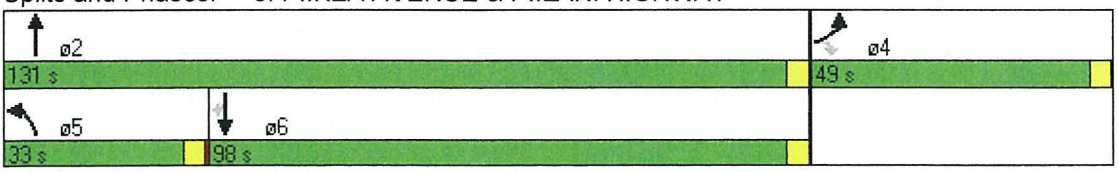


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	378	251	244	1856	1627	525
Lane Group Flow (vph)	411	273	265	2017	1768	571
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phases	4	4	5	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	49.0	49.0	33.0	131.0	98.0	98.0
Total Split (%)	27.2%	27.2%	18.3%	72.8%	54.4%	54.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.96	0.51	0.95	0.80	0.94	0.59
Control Delay	94.2	19.9	111.4	20.6	35.0	6.1
Queue Delay	0.0	0.0	0.0	1.8	0.0	0.0
Total Delay	94.2	19.9	111.4	22.4	35.0	6.1
Queue Length 50th (ft)	480	75	314	806	1098	69
Queue Length 95th (ft)	#691	176	#500	900	#1126	104
Internal Link Dist (ft)	745			1063	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	443	542	285	2525	1888	976
Starvation Cap Reductn	0	0	0	332	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.50	0.93	0.92	0.94	0.59

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY

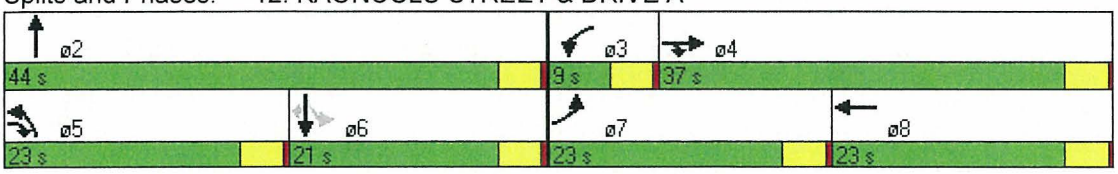


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	380	139	281	53	371	376	0	27	0	187
Lane Group Flow (vph)	413	151	305	58	439	409	35	0	29	203
Turn Type	Prot		pt+ov	Prot		Prot		Perm		Perm
Protected Phases	7	4	4 5	3	8	5	2		6	
Permitted Phases								6		6
Detector Phases	7	4	4 5	3	8	5	2	6	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	8.0	20.0	20.0	20.0	20.0
Total Split (s)	23.0	37.0	60.0	9.0	23.0	23.0	44.0	21.0	21.0	21.0
Total Split (%)	25.6%	41.1%	66.7%	10.0%	25.6%	25.6%	48.9%	23.3%	23.3%	23.3%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.69	0.14	0.31	0.59	0.71	0.66	0.03		0.07	0.33
Control Delay	44.0	24.7	5.6	66.9	37.4	36.9	0.1		28.9	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	44.0	24.7	5.6	66.9	37.4	36.9	0.1		28.9	6.5
Queue Length 50th (ft)	191	56	45	33	122	110	0		12	0
Queue Length 95th (ft)	253	m77	106	#88	166	154	0		38	57
Internal Link Dist (ft)		146			432		103		80	
Turn Bay Length (ft)										
Base Capacity (vph)	725	1298	1030	98	745	735	1163		402	609
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.57	0.12	0.30	0.59	0.59	0.56	0.03		0.07	0.33

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: KAONOULU STREET & DRIVE A

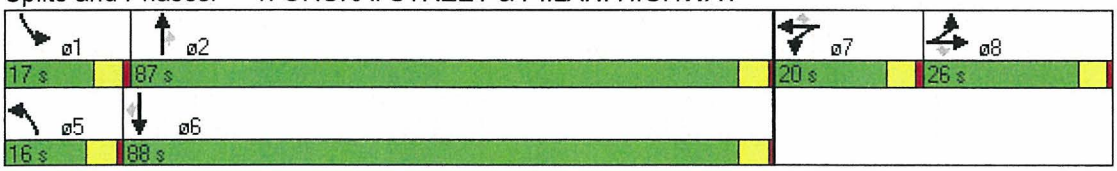


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	45	196	68	62	37	92	1463	102	95	1558	110
Lane Group Flow (vph)	197	49	213	74	67	40	100	1590	111	103	1693	120
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Perm
Protected Phases	8	8		7	7		5	2		1	6	
Permitted Phases			8			7			2			6
Detector Phases	8	8	8	7	7	7	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	10.0	5.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	10.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	26.0	26.0	26.0	20.0	20.0	20.0	16.0	87.0	87.0	17.0	88.0	88.0
Total Split (%)	17.3%	17.3%	17.3%	13.3%	13.3%	13.3%	10.7%	58.0%	58.0%	11.3%	58.7%	58.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio	0.74	0.18	0.54	0.47	0.40	0.22	0.69	0.75	0.11	0.64	0.79	0.12
Control Delay	68.0	56.8	15.8	68.3	66.8	18.9	80.4	25.1	6.0	77.5	26.3	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	56.8	15.8	68.3	66.8	18.9	80.4	25.1	6.0	77.5	26.3	6.1
Queue Length 50th (ft)	182	41	22	69	62	0	95	605	13	97	670	16
Queue Length 95th (ft)	#303	85	106	124	114	38	#187	746	44	#183	825	47
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	311	327	432	216	228	229	167	2183	1006	179	2198	1014
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.15	0.49	0.34	0.29	0.17	0.60	0.73	0.11	0.58	0.77	0.12

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 130.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY



2: UWAPO ROAD & PIILANI HIGHWAY

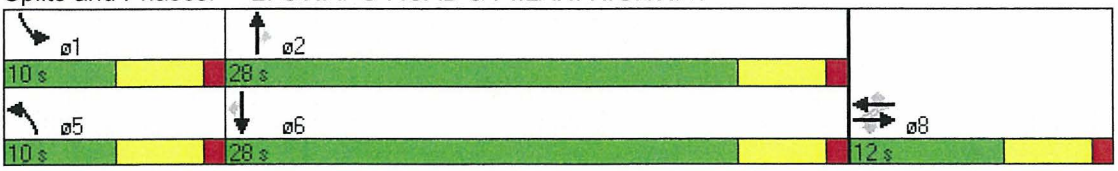
12/24/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	53	115	204	74	132	79	1451	152	249	1632	49
Lane Group Flow (vph)	65	58	125	222	80	143	86	1577	165	271	1774	53
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		8			8		5	2		1	6	
Permitted Phases	8		8	8		8			2			6
Detector Phases	8	8	8	8	8	8	5	2	2	1	6	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	27.0	27.0	10.0	27.0	27.0
Total Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	28.0	28.0	10.0	28.0	28.0
Total Split (%)	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	20.0%	56.0%	56.0%	20.0%	56.0%	56.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio	0.31	0.19	0.35	0.53	0.27	0.38	0.43	0.93	0.20	0.66	0.90	0.06
Control Delay	23.1	20.1	7.9	24.6	21.1	7.8	28.3	24.6	2.3	30.3	21.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	20.1	7.9	24.6	21.1	7.8	28.3	24.6	2.3	30.3	21.6	2.8
Queue Length 50th (ft)	17	15	0	31	21	0	24	208	0	40	~311	0
Queue Length 95th (ft)	46	40	35	58	51	37	58	#360	22	#80	#430	13
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	210	298	358	416	298	373	198	1699	846	412	1982	909
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.19	0.35	0.53	0.27	0.38	0.43	0.93	0.20	0.66	0.90	0.06

Intersection Summary

Cycle Length: 50
Actuated Cycle Length: 50
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY

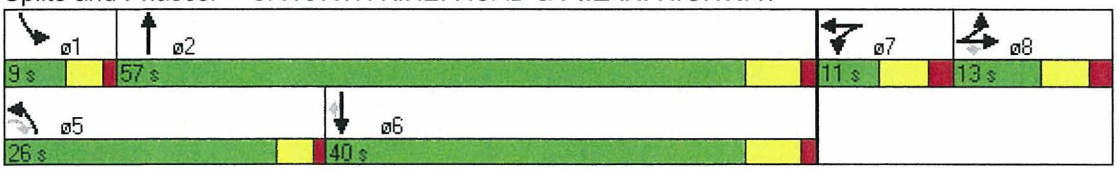


Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	186	0	508	0	446	1190	6	1396	157
Lane Group Flow (vph)	101	101	552	3	485	1297	7	1517	171
Turn Type	Split		custom		Prot		Prot		Perm
Protected Phases	8	8		7	5	2	1	6	
Permitted Phases			5 8						6
Detector Phases	8	8	5 8	7	5	2	1	6	6
Minimum Initial (s)	7.0	7.0		5.0	10.0	20.0	5.0	20.0	20.0
Minimum Split (s)	13.0	13.0		11.0	26.0	26.0	9.0	26.0	26.0
Total Split (s)	13.0	13.0	39.0	11.0	26.0	57.0	9.0	40.0	40.0
Total Split (%)	14.4%	14.4%	43.3%	12.2%	28.9%	63.3%	10.0%	44.4%	44.4%
Yellow Time (s)	4.0	4.0		4.0	3.0	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.0		2.0	1.0	1.5	1.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None		None	None	Min	None	Min	Min
v/c Ratio	0.50	0.50	0.45	0.02	0.67	0.50	0.06	0.89	0.20
Control Delay	43.2	43.2	10.1	30.3	29.6	6.4	40.5	27.5	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	43.2	10.1	30.3	29.6	6.4	40.5	27.5	4.0
Queue Length 50th (ft)	45	45	50	0	103	82	3	303	3
Queue Length 95th (ft)	#127	#127	113	9	175	296	18	#643	43
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	203	203	1347	141	933	2583	108	1708	845
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.50	0.41	0.02	0.52	0.50	0.06	0.89	0.20

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 75.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

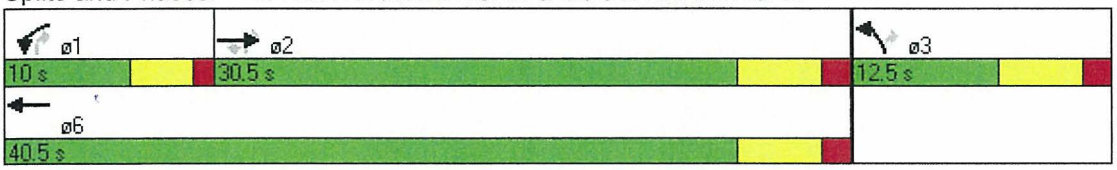


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	468	479	129	456	373	141
Lane Group Flow (vph)	509	521	140	496	405	153
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Detector Phases	2	2	1	6	3	1 2 3
Minimum Initial (s)	10.0	10.0	5.0	10.0	7.0	
Minimum Split (s)	30.5	30.5	9.0	15.5	12.5	
Total Split (s)	30.5	30.5	10.0	40.5	12.5	53.0
Total Split (%)	57.5%	57.5%	18.9%	76.4%	23.6%	100.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.5	1.5	1.0	1.5	1.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	Min	
v/c Ratio	0.58	0.51	0.68	0.21	0.68	0.10
Control Delay	12.1	2.7	41.0	3.3	28.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	2.7	41.0	3.3	28.3	0.1
Queue Length 50th (ft)	100	0	43	22	63	0
Queue Length 95th (ft)	173	38	#116	34	#117	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	935	1054	214	2437	592	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.49	0.65	0.20	0.68	0.10

Intersection Summary

Cycle Length: 53
Actuated Cycle Length: 50
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

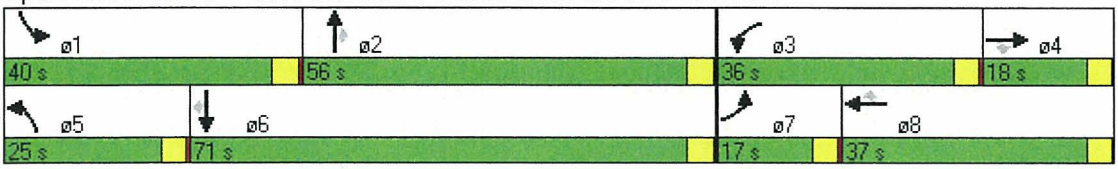


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	251	178	658	227	108	135	966	685	596	1070	145
Lane Group Flow (vph)	107	273	193	715	247	117	147	1050	745	648	1163	158
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phases	7	4	4	3	8	8	5	2	2	1	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	17.0	18.0	18.0	36.0	37.0	37.0	25.0	56.0	56.0	40.0	71.0	71.0
Total Split (%)	11.3%	12.0%	12.0%	24.0%	24.7%	24.7%	16.7%	37.3%	37.3%	26.7%	47.3%	47.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio	0.72	0.81	0.59	0.94	0.57	0.16	0.72	0.85	0.56	0.86	0.73	0.20
Control Delay	83.4	78.2	15.6	70.8	55.4	8.2	70.2	49.0	11.1	59.2	34.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.4	78.2	15.6	70.8	55.4	8.2	70.2	49.0	11.1	59.2	34.5	7.3
Queue Length 50th (ft)	102	137	0	354	215	0	138	488	79	308	465	18
Queue Length 95th (ft)	#191	#213	80	#492	317	30	216	595	152	382	574	63
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	165	357	333	787	444	754	259	1292	1363	859	1664	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.76	0.58	0.91	0.56	0.16	0.57	0.81	0.55	0.75	0.70	0.20

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 139.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY

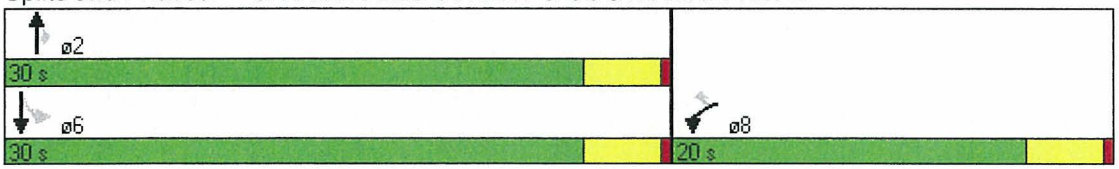


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	234	128	559	259	159	475
Lane Group Flow (vph)	254	139	608	282	173	516
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	30.0	30.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
v/c Ratio	0.55	0.27	0.60	0.29	0.58	0.51
Control Delay	14.9	4.1	9.7	1.8	16.4	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	4.1	9.7	1.8	16.4	8.5
Queue Length 50th (ft)	43	0	78	0	22	62
Queue Length 95th (ft)	110	29	199	26	#113	157
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	609	636	1104	1053	328	1104
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.22	0.55	0.27	0.53	0.47

Intersection Summary

Cycle Length: 50
Actuated Cycle Length: 42.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: KAONOULU STREET & SOUTH KIHEI ROAD

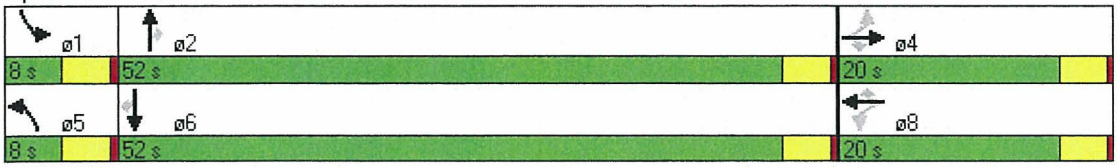


Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	ø1	ø8
Lane Configurations									
Volume (vph)	92	0	81	35	1790	1693	110		
Lane Group Flow (vph)	0	100	88	38	1946	1840	120		
Turn Type	Perm		Perm	Prot			Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phases	4	4	4	5	2	6	6		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	8.0	52.0	52.0	52.0	8.0	20.0
Total Split (%)	25.0%	25.0%	25.0%	10.0%	65.0%	65.0%	65.0%	10%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
v/c Ratio		0.53	0.30	0.45	0.70	0.72	0.10		
Control Delay		32.5	8.4	51.8	7.1	11.1	1.5		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		32.5	8.4	51.8	7.1	11.1	1.5		
Queue Length 50th (ft)		43	0	17	197	287	0		
Queue Length 95th (ft)		88	36	#53	370	474	18		
Internal Link Dist (ft)		212			1953	2017			
Turn Bay Length (ft)									
Base Capacity (vph)		262	366	85	2791	2570	1182		
Starvation Cap Reductn		0	0	0	0	0	0		
Spillback Cap Reductn		0	0	0	0	0	0		
Storage Cap Reductn		0	0	0	0	0	0		
Reduced v/c Ratio		0.38	0.24	0.45	0.70	0.72	0.10		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 83.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY

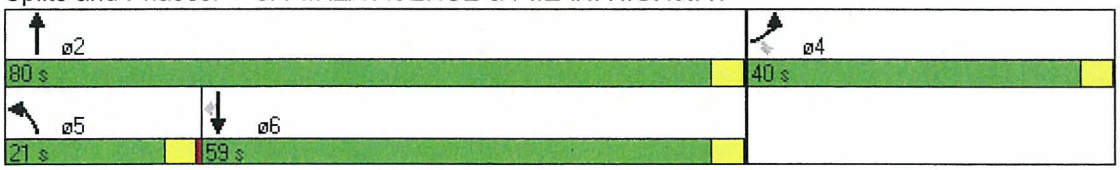


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	452	255	214	1478	1393	526
Lane Group Flow (vph)	491	277	233	1607	1514	572
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	40.0	40.0	21.0	80.0	59.0	59.0
Total Split (%)	33.3%	33.3%	17.5%	66.7%	49.2%	49.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
v/c Ratio	0.92	0.42	0.93	0.72	0.93	0.59
Control Delay	65.7	6.5	92.4	17.1	42.5	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	6.5	92.4	17.1	42.5	8.1
Queue Length 50th (ft)	368	6	181	408	570	61
Queue Length 95th (ft)	#575	70	#336	493	#736	168
Internal Link Dist (ft)	620			1070	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	531	661	251	2241	1622	962
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.42	0.93	0.72	0.93	0.59

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR	ø1
Lane Configurations										
Volume (vph)	434	190	437	71	512	512	0	0	177	
Lane Group Flow (vph)	472	207	475	77	590	557	39	38	192	
Turn Type	Prot		Prot	Prot		Prot			Perm	
Protected Phases	7	4	4	3	8	5	2	6		1
Permitted Phases									6	
Detector Phases	7	4	4	3	8	5	2	6	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0	20.0	8.0
Total Split (s)	16.0	28.0	28.0	8.0	20.0	18.0	31.0	21.0	21.0	8.0
Total Split (%)	21.3%	37.3%	37.3%	10.7%	26.7%	24.0%	41.3%	28.0%	28.0%	11%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None
v/c Ratio	0.86	0.18	0.56	0.82	0.81	0.87	0.04	no cap	0.37	
Control Delay	48.2	18.7	5.0	92.8	36.5	45.8	0.1		6.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay	48.2	18.7	5.0	92.8	36.5	45.8	0.1	Error	6.4	
Queue Length 50th (ft)	111	36	0	36	135	130	0	~38	0	
Queue Length 95th (ft)	#189	60	62	#110	#207	#214	0	#96	48	
Internal Link Dist (ft)		86			399		103	80		
Turn Bay Length (ft)										
Base Capacity (vph)	549	1178	844	94	755	642	1045	1	520	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.86	0.18	0.56	0.82	0.78	0.87	0.04	38.00	0.37	

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: UPCOUNTRY HIGHWAY & DRIVE A