

VOLUME 4
~~DRAFT~~ FINAL ENVIRONMENTAL
IMPACT STATEMENT
FOR
PI'ILANI PROMENADE

APPENDICES M - N

Appendix M	Traffic Impact Analysis Report <u>dated June 6, 2014</u>
<u>Appendix M-1</u>	<u>SSFM Traffic Impact Analysis Report Update dated December 20, 2016</u>
Appendix N	Conditions of Motion to Amend with Proposed Changes

June 2017
~~August 2014~~





APPENDIX M
Traffic Impact Analysis Report dated June 6, 2014

TRAFFIC IMPACT ANALYSIS REPORT FOR
PIILANI PROMENADE

IN KIHEI, MAUI, HAWAII

Prepared For

SAROFIM REALTY ADVISORS

8115 Preston Road, Suite 400
Dallas, Texas 75225

Phillip Rowell and Associates

47-273 'D' Hui Iwa Street
Kaneohe, Hawai'i 96744
Tel: 808-239-8206 Fax: 808-239-4175
Email: prowell@hawaii.rr.com

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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. A preliminary site plan indicating the approximate locations of buildings and driveways is provided as [Figure 2](#).
3. 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 Haliemaile Road, providing a connection between Kihei and Upcountry (Upcountry Highway).
4. There will be four (4) driveways along East Kaonoulu Street to serve the project. Refer to [Figure 3](#).
 - a. 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.
- b. 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.
 - c. Drive C is located approximately 500 feet east of Drive A. This driveway provides service to the south parcel and future affordable housing units (Honua'ula Off-site Affordable Housing) 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.
 - d. 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 by service and employee vehicles. Anticipated use of this driveway is minimal.
4. 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.
 5. 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.
 6. 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.
 - 7.
 8. 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.
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 impacts of the Honua’ula Off-Site Affordable Housing project at the study intersections.

Chapter 7 describes the long range traffic projections along Piilani Highway.

Chapter 8 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 9 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 4](#). Also shown are the methods of right-of-way control at the study intersections.

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 study intersections were selected in consultation with State of Hawaii Department of Transportation. Generally, there are no signalized intersections north of North Kihei Road or west of South Kihei Road for several miles. The intersection of Piilani Highway at Piikea Avenue is the southernmost intersection and is approximately 1.25 miles from the project. Most of the project generated traffic has dissipated before reaching this intersection.

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 is 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 5, 6 and 7](#).

1. 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. These 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. 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 as determined from counts of 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](#).

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 Lane Group	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
Eastbound 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 unsignalized 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

Intersection and Lane Group	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	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 Kulanihako 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-Service² 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 less³.

A standard has not been established for unsignalized intersections that has been agreed to by State of Hawaii Department of Transportation. 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 any 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 or the anticipated year of 100% occupancy. 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. It is also anticipated that the project will be 100%, or near, occupancy by 2018.

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 projects in Kihei have used a growth factor of 2.0% rather than 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. This project received an approval for affordable housing but no permits have been filed with the County of Maui for development of this parcel. Timing of this project is uncertain.

The traffic assignments for the subdivision were obtained from the traffic study for the project⁵.

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

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

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

be signalized. A separate southbound to eastbound left turn lane will also be constructed. The intersection of Kaonoulu Street at Alulike Street will be converted to a roundabout.

Groundbreaking is scheduled for late 2014 or early 2015. The project may not be completed by 2018, the horizon year for this TIAR, but the project will be generating a majority of its estimated traffic. Therefore, the project is included as a related project.

The traffic assignments for the project were obtained from the traffic study for the project⁶.

C. *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.

Work on Phase 1 has not been initiated as of the date of this report nor is it expected to be completed by 2015. Traffic generation from this project is not expected to occur until at least 2017.

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

The number of trips that the high school will generate during weekday peak hours was obtained from the TIAR⁷ for the project. Based on trip generation data provided in *Trip Generation*, the number of trips generated on a Saturday will be negligible.

D. *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 2017.

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 project⁸.

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 8](#).

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

⁷ Wilson Okamoto Corporation, *Traffic Impact Report Kihei High School*, September 2011

⁸ Phillip Rowell and Associates, *TIAR for Kenolio 6 Affordable Housing Project*, May 27, 2010

Table 6 Trip Generation Summary of Related Projects

	Related Project	Description	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
			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 High School (Phase 1)	800 Students Grades 9 thru 12	228	108	336	104	55	159	0	0	0
D	Kenolio 6 Affordable Housing Project	124 Multi-Family	20	48	68	51	32	83	32	32	64
TOTALS FOR 2018			512	343	855	409	348	757	408	333	741

The Honua’ula Affordable Housing project was not included as a background project because it cannot be constructed until after East Kaonoulu Road is completed, which will be done as part of the Piilani Promenade project. Until this roadway is completed, there is no roadway to assign Honua’ula trips. However, since Honua’ula traffic must be considered in the projections to confirm that they can be accommodated by East Kaonoulu Road, the results of the trip generation analysis of Honua’ula and the results of the trip distribution and assignment process are presented in Chapter 4.

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 9, 10 and 11](#).

2018 Background Levels-of-Service

[Figure 12](#) 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 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.*
2. 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.*
3. The intersection of Kaonoulu Street at Alulike Street has been converted from a STOP sign controlled intersection to a roundabout.

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 approaches 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.*

[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. Even though the level-of-service is defined by delay, the volume-to-capacity ratios are shown as it is a factor used to determine whether the delay of a particular traffic movement, or lane group, is the result of the traffic signal timing or the result of a capacity deficiency. The level-of-service analysis also used the existing traffic signal cycle lengths.

[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) 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.

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

Intersection and Lane Group	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	0.86	34.4	C	0.92	49.6	D	0.77	23.8	C
Eastbound Left & Thru	0.78	65.6	E	0.91	100.5	F	0.79	40.6	D
Eastbound Right	0.05	46.7	D	0.06	57.7	E	0.09	24.5	C
Westbound Left & Thru	0.92	82.3	F	0.93	93.8	F	0.96	93.2	F
Westbound Right	0.12	44.5	D	0.12	52.2	D	0.03	29.6	C
Northbound Left	0.27	75.5	E	0.70	92.0	F	0.42	32.9	C
Northbound Thru	0.77	21.4	C	0.92	30.9	C	0.74	19.6	B
Northbound Right	0.03	3.1	A	0.05	6.2	A	0.07	12.3	B
Southbound Left	0.82	83.7	F	0.91	92.3	F	0.57	32.2	C
Southbound Thru	0.90	26.6	C	0.85	47.4	D	0.72	17.0	B
Southbound Right	0.07	2.8	A	0.08	50.4	D	0.07	10.4	B
Piilani Highway at Kaiwahine Street	0.64	29.1	C	0.68	22.8	C	0.59	10.2	B
Eastbound Left & Thru	0.81	69.9	E	0.78	88.3	F	0.55	22.0	C
Eastbound Right	0.07	42.2	D	0.05	58.8	E	0.04	19.8	B
Westbound Left & Thru	0.60	53.0	D	0.52	65.0	E	0.54	23.9	C
Westbound Right	0.07	42.2	D	0.05	58.8	E	0.03	20.1	C
Northbound Left	0.25	35.2	D	0.47	85.7	F	0.33	26.9	C
Northbound Thru	0.62	26.5	C	0.67	15.8	B	0.53	11.9	B
Northbound Right	0.04	35.7	D	0.08	7.3	A	0.04	6.7	A
Southbound Left	0.37	44.0	D	0.63	77.8	E	0.67	28.3	C
Southbound Thru	0.60	22.5	C	0.62	16.1	B	0.62	9.4	A
Southbound Right	0.01	15.6	B	0.05	7.4	A	0.03	4.6	A
Piilani Highway at North Kihei Road	0.61	29.6	C	0.78	36.5	D	0.61	17.1	B
Eastbound Left	0.57	59.7	E	0.75	56.8	E	0.46	29.8	C
Eastbound Left & Thru	0.59	60.9	E	0.78	59.6	E	0.46	29.8	C
Eastbound Right	0.22	59.9	E	0.13	58.2	E	0.14	15.6	B
Westbound Left, Thru & Right	0.20	58.3	E	0.58	73.5	E	0.02	32.5	C
Northbound Left	0.71	42.1	D	0.84	72.9	E	0.54	27.4	C
Northbound Thru & Right	0.54	19.0	B	0.56	16.9	B	0.50	8.7	A
Southbound Left	0.19	63.6	E	0.46	78.4	E	0.35	38.3	D
Southbound Thru	0.66	23.0	C	0.76	32.5	C	0.80	20.6	C
Southbound Right	0.08	14.7	B	0.16	20.0	B	0.11	11.8	B
North Kihei Road at South Kihei Road	0.40	20.5	C	0.58	24.5	C	0.59	10.1	B
Eastbound Thru	0.27	9.9	A	0.42	19.8	C	0.39	10.1	B
Eastbound Right	0.18	9.2	A	0.36	18.8	C	0.27	9.3	A
Westbound Left	0.59	68.9	E	0.71	98.7	F	0.57	21.2	C
Westbound Thru	0.17	1.1	A	0.15	2.1	A	0.14	3.3	A
Northbound Left	0.77	54.8	D	0.37	49.7	D	0.52	17.9	B
Northbound Right	0.13	0.0	A	0.12	0.0	A	0.10	0.0	A
Piilani Highway at Kaonoulu Street	0.79	16.1	B	0.74	13.0	B	0.61	6.1	A
Eastbound Left	0.36	55.5	E	0.45	70.2	E	0.27	21.0	C
Eastbound Right	0.42	56.3	E	0.13	66.6	E	0.46	22.4	C
Northbound Left	0.62	43.2	D	0.72	71.9	E	0.59	8.6	A
Northbound Thru	0.39	7.9	A	0.56	4.1	A	0.46	4.1	A
Southbound Thru	0.68	12.7	B	0.63	9.0	A	0.52	4.4	A
Southbound Right	0.05	13.4	B	0.07	7.6	A	0.08	2.9	A

Table 7 2018 Background Levels-of-Service of Signalized Intersections (Continued)

South Kihei Road at Kaonoulu Street	0.45	6.2	A	0.50	8.4	A	0.44	5.4	A
Westbound Left	0.42	23.8	C	0.46	28.4	C	0.48	23.6	C
Westbound Right	0.03	21.5	C	0.03	25.4	C	0.02	20.8	C
Northbound Thru	0.45	3.5	A	0.49	6.1	A	0.44	3.6	A
Northbound Right	0.06	2.3	A	0.11	4.3	A	0.09	2.5	A
Southbound Left	0.06	2.3	A	0.70	48.5	D	0.10	2.5	A
Southbound Thru	0.30	2.9	A	0.40	2.6	A	0.37	3.3	A
Piilani Highway at Kulanihako'i Road	0.76	15.5	B	0.66	10.8	B	0.53	6.4	A
Eastbound Left & Thru	0.37	54.2	D	0.51	72.0	E	0.29	28.2	C
Eastbound Right	0.27	53.1	D	0.06	65.8	E	0.06	26.6	C
Westbound Left & Thru	0.61	62.3	E	0.47	71.3	E	0.00	0.0	A
Westbound Right	0.02	50.8	D	0.01	65.4	E	0.00	0.0	A
Northbound Left	0.51	74.1	E	0.60	67.0	E	0.73	73.4	E
Northbound Thru	0.54	9.7	A	0.68	4.6	A	0.48	3.1	A
Northbound Right	0.08	4.3	A	0.02	2.1	A	0.00	0.0	A
Southbound Left	0.51	63.0	E	0.32	57.3	E	0.00	0.0	A
Southbound Thru	0.76	12.4	B	0.64	8.4	A	0.53	5.7	A
Southbound Right	0.02	5.5	A	0.06	7.8	A	0.05	3.7	A
Piilani Highway at Piikea Avenue	0.80	19.7	B	0.78	30.8	C	0.79	17.4	B
Eastbound Left	0.86	67.2	E	0.86	77.1	E	0.79	30.8	C
Eastbound Right	0.16	42.1	D	0.17	50.8	D	0.17	18.2	B
Northbound left	0.67	65.1	E	0.85	79.9	E	0.77	35.5	D
Northbound Thru	0.46	7.0	A	0.61	9.5	A	0.51	7.0	A
Southbound Thru	0.80	17.2	B	0.72	32.3	C	0.80	21.4	C
Southbound Right	0.28	10.5	B	0.34	31.6	C	0.26	13.5	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 Background Levels-of-Service of Unsignalized Intersections

Intersection and Lane Group	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	Delay ¹	LOS ²	Delay	LOS	Delay	LOS
Kaonoulu Street at Kenolio Road	6.7	A	5.1	A	6.4	A
Eastbound Left	7.6	A	7.7	A	8.1	A
Westbound Left	7.5	A	7.6	A	7.7	A
Northbound Left	11.2	B	12.8	B	17.9	C
Northbound Thru & Right	9.4	A	10.2	B	11.5	B
Southbound Left	16.0	C	16.2	C	27.7	D
Southbound Thru & Right	9.5	A	11.0	B	12.0	B
Kaonoulu Street at Alulike Street	V/C	LOS	V/C	LOS	V/C	LOS
	0.14	A	0.22	A	0.20	A
Eastbound Left	0.14	A	0.22	A	0.20	A
Westbound Left	0.09	A	0.12	A	0.14	A
Northbound Left, Thru & Right	0.01	A	0.01	A	0.02	A
Southbound Left, Thru & Right	0.06	A	0.05	A	0.09	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.
- (3) See [Appendix C](#) for Level-of-Service Analysis Worksheets.

Mitigation Required for 2018 Background 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 and the intersection of Piilani Highway at Kaiwahine Street and Uwapo Road to accommodate traffic associated with background growth and the related projects.

1. At the intersection of Piilani Highway at Ohukai Road, the eastbound and westbound approaches should be modified to provide one left turn lane, one optional left turn or thru lane and one right turn lane and the southbound approach should be modified to provide an additional left turn only lane. The second left turn lane will require the widening of eastbound Ohukai to accommodate traffic from the second lane at least to the driveway into the service station.
2. At the intersection of Piilani Highway at Kaiwahine Street and Uwapo Road, the eastbound and westbound approaches should be modified to provide separate left turn, through and right turn lanes.

These improvements are shown on [Figure 13](#).

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 improvements are summarized in [Table 9](#).

Table 9 Mitigation Analysis - Background Conditions

Intersection and Lane Group	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									
Piilani Highway at Ohukai Road	0.86	34.4	C	0.77	25.8	C	0.92	49.6	D	0.77	34.3	C	0.77	29.2	C	0.62	18.8	B
	Cycle Length = 125 Seconds			Cycle Length = 150 Seconds			Cycle Length = 70 Seconds											
Eastbound Left				0.46	51.7	D				0.62	72.7	E				0.57	37.7	D
Eastbound Left & Thru	0.78	65.6	E	0.41	51.1	D	0.91	100.5	F	0.63	73.1	E	0.79	40.6	D	0.59	38.4	D
Eastbound Right	0.05	46.7	D	0.05	47.6	D	0.06	57.7	E	0.06	61.7	E	0.09	24.5	C	0.09	32.2	C
Westbound Left				0.60	55.9	E				0.69	72.8	E				0.63	48.2	D
Westbound Left & Thru	0.92	82.3	F	0.63	56.9	E	0.93	93.8	F	0.72	74.2	E	0.96	93.2	F	0.55	42.4	D
Westbound Right	0.12	44.5	D	0.12	48.3	D	0.12	52.2	D	0.24	60.1	E	0.03	29.6	C	0.03	35.8	C
Northbound Left	0.27	75.5	E	0.27	74.8	E	0.70	92.0	F	0.69	85.4	F	0.42	32.9	C	0.43	38.8	D
Northbound Thru	0.77	21.4	C	0.69	14.1	B	0.92	30.9	C	0.76	13.9	B	0.74	19.6	B	0.60	14.9	B
Northbound Right	0.03	3.1	A	0.03	2.2	A	0.05	6.2	A	0.05	2.3	A	0.07	12.3	B	0.07	10.2	B
Southbound Left	0.82	83.7	F	0.46	65.2	E	0.91	92.3	F	0.62	63.4	D	0.57	32.2	C	0.30	34.4	C
Southbound Thru	0.90	26.6	D	0.83	19.1	B	0.85	47.4	D	0.74	33.8	C	0.72	17.0	B	0.60	12.7	B
Southbound Right	0.07	2.8	A	0.07	2.4	A	0.08	50.4	D	0.07	35.6	D	0.07	10.4	B	0.07	8.3	A
Piilani Highway at Kaiwahine Street	0.64	29.1	C	0.60	24.5	C	0.68	22.8	C	0.65	22.1	C	0.59	10.2	B	0.58	10.0	B
	Cycle Length = 125 Seconds			Cycle Length = 150 Seconds			Cycle Length = 60 Seconds											
Eastbound Left	0.81	69.9	E	0.66	56.8	E	0.78	88.3	F	0.65	75.9	E	0.55	22.0	C	0.44	33.0	C
Eastbound Thru				0.06	44.1	D				0.12	62.2	E				0.07	29.1	C
Eastbound Right	0.07	42.2	D	0.07	44.3	D	0.05	58.8	E	0.05	61.7	E	0.04	19.8	B	0.04	28.9	C
Westbound Left & Thru	0.60	53.0	D	0.33	47.3	D	0.52	65.0	E	0.27	63.9	E	0.54	23.9	C	0.30	31.2	C
Westbound Thru				0.10	44.5	D				0.26	63.5	E				0.21	30.0	C
Westbound Right	0.07	42.2	D	0.07	44.3	D	0.05	58.8	E	0.05	61.6	E	0.03	20.1	C	0.03	28.9	C
Northbound Left	0.25	35.2	D	0.25	38.0	D	0.47	85.7	F	0.47	79.2	E	0.33	26.9	C	0.33	34.3	C
Northbound Thru	0.62	26.5	C	0.60	19.7	B	0.67	15.8	B	0.65	18.2	B	0.53	11.9	B	0.53	6.7	A
Northbound Right	0.04	35.7	D	0.04	26.7	C	0.08	7.3	A	0.08	10.2	B	0.04	6.7	A	0.04	4.3	A
Southbound Left	0.37	44.0	D	0.37	44.4	D	0.63	77.8	E	0.63	83.5	F	0.67	28.3	C	0.67	45.2	D
Southbound Thru	0.60	22.5	C	0.56	20.3	C	0.62	16.1	B	0.60	12.3	B	0.62	9.4	A	0.62	7.2	A
Southbound Right	0.01	15.6	B	0.01	13.3	B	0.05	7.4	A	0.05	5.0	A	0.03	4.6	A	0.03	3.8	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*⁹ and data provided in *Trip Generation*¹⁰. 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 leasable floor area. The trip generation equations for shopping centers are summarized in [Table 10](#).

⁹ Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

¹⁰ Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 2003

Table 10 Trip Generation Formulas for Retail Uses

	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Total	$\text{Ln}(T) = 0.59\text{Ln}(A) + 2.32$	$\text{Ln}(T) = 0.67\text{Ln}(A) + 3.37$	$\text{Ln}(T) = 0.65\text{Ln}(A) + 3.76$
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*.¹¹ 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 Peak Hour	Saturday Peak Hour
Total	No Formula Provided	$\text{Ln}(T) = -0.29 \text{Ln}(A) + 5.00$	$T = -0.02 + 38.59$
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 Peak 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.

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.

¹¹ Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., June 2004

Table 13 Trip Generation Formulas for Light Industrial Uses

	Weekday AM Peak Hour	Weekday PM Peak 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 Peak 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 (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 tourists 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 generated 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, Makena Resort 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 (Honua'ula Off-site Affordable Housing) 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 by 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 14](#). The project morning peak hour, afternoon peak hour and Saturday peak hour trip assignments are shown in [Figures 15, 16 and 17](#), 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 18, 19 and 20](#). The 2018 background plus project traffic projections along East Kaonoulu Street and at the project driveways are shown on [Figure 21](#).

Honua'ula Affordable Housing Project Traffic

The Honua'ula Affordable Housing Project will consist of 125 owner occupied residential condominiums and 125 residential apartments along the north side of East Kaonoulu Street east of the project. Access to and egress from the project will be via Drive C.

Trip Generation provides rates and equations to estimate the number of peak hour trips during the peak hours of the adjacent street and the peak hours of the generator, which may or may not coincide. The AM peak hour of the adjacent street is typically between 7:00 AM and 9:00 AM and PM peak hour is between 4:00 PM and 6:00 PM, typical commute hours. *Trip Generation* does not note the peak hours of the generators. The trip generation rates and equations are based on the number of dwelling units proposed. For this project, the trip generation equations for the generator have been used as the results are slightly higher than the results using the equations for the peak hours of the adjacent street

The trip generation equations used for the trip generation analysis and the results are summarized in [Table 16](#). The trip generation analysis estimated that the project will generate a total of 131 trips during the morning peak hour, 168 trips during the afternoon peak hour and 149 trip during the Saturday peak hour.

Table 16 Trip Generation Analysis for Honua'ula

Period & Direction		Condominiums (Land Use Code 230)			Apartments (Land Use Code 220)			Total
		Trips per Unit or Percent ^{(1),(2)}	Units	Trips	Trips per Unit or Percent	Units	Trips	
AM Peak Hour of Adjacent Street	Total	$\text{Ln}(T) = 0.80 \text{Ln}(X) + 0.26$	125	62	$T = 0.49 (X) + 3.73$	125	65	127
	Inbound	17%		11	20%		13	24
	Outbound	83%		51	80%		52	103
PM Peak Hour of Adjacent Street	Total	$\text{Ln}(T) = 0.82 \text{Ln}(X) + 0.32$		72	$T = 0.55 (X) + 17.65$		86	158
	Inbound	67%		48	65%		56	104
	Outbound	33%		24	35%		30	54
AM Peak Hour of Generator	Total	$\text{Ln}(T) = 0.82 \text{Ln}(X) + 0.15$		61	$T = 0.54 (X) + 2.45$		70	131
	Inbound	19%		12	29%		20	32
	Outbound	81%		49	71%		50	99
PM Peak Hour of Generator	Total	$T = 0.34 (X) + 35.87$		78	$T = 0.60 (X) + 14.91$		90	168
	Inbound	64%		50	61%		55	105
	Outbound	36%		28	39%		35	63
Saturday Peak Hour	Total	$T = 0.29 (X) + 42.63$		79	$T = 0.41(X) + 19.23$		70	149
	Inbound	54%		43	50% ⁽³⁾		35	78
	Outbound	46%		36	50%		35	71

Notes:

- (1) Source: Institute of Transportation Engineers, *Trip Generation 8th Edition*, 2008, pages 389 and 390.
- (2) T=trips, X=number of dwelling units
- (3) Trip Generation did not provide directional split data. A directional split of 50/50 was assumed.

Honua'ula trips were distributed and assigned based on existing traffic patterns as estimated from the traffic counts. The traffic assignments are shown as [Figures 22,23, 24 and 25](#). These trips are included in the analysis as background traffic to confirm that the improvements along East kaonoulu Street will accommodate both Piilani Promenade traffic and Honua'ula traffic.

Honua'ula trip assignments were added to the background traffic projections for Piilani Promenade to estimate total traffic of the two projects along East Kaonoulu Street. These projections include both Piilani Promenade and Honua'ula Traffic and are shown as [Figures 26, 27, 28 and 29](#).

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 17](#). 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 17 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	3601	3830	280	7.3%	229	6.0%
	PM	3688	3976	4630	288	6.2%	654	14.1%
	SAT	2622	2961	3778	339	9.0%	817	21.6%
Piilani Hwy at Uwapo Rd & Kaiwahine St	AM	2939	3249	3421	310	9.1%	172	5.0%
	PM	3337	3669	4160	332	8.0%	491	11.8%
	SAT	2619	2981	3594	362	10.1%	613	17.1%
Piilani Hwy at N. Kihei Rd & Mokulele Hwy	AM	3081	3381	3495	300	8.6%	114	3.3%
	PM	3402	3711	4039	309	7.7%	328	8.1%
	SAT	2738	3077	3487	339	9.7%	410	11.8%
S. Kihei Rd at N. Kihei Rd	AM	1498	1677	1763	179	10.2%	86	4.9%
	PM	1730	1879	2125	149	7.0%	246	11.6%
	SAT	1329	1538	1845	209	11.3%	307	16.6%
Piilani Hwy at Kaonoulu St	AM	2941	3117	3711	176	4.7%	594	16.0%
	PM	3288	3581	5537	293	5.3%	1956	35.3%
	SAT	2296	2680	5181	384	7.4%	2501	48.3%
S. Kihei Rd at Kaonoulu St	AM	1017	1183	1285	166	12.9%	102	7.9%
	PM	1242	1407	1701	165	9.7%	294	17.3%
	SAT	1122	1306	1676	184	11.0%	370	22.1%
Piilani Hwy at Kulanihakoi St	AM	3363	3698	3921	335	8.5%	223	5.7%
	PM	3488	3772	4409	284	6.4%	637	14.4%
	SAT	2323	2597	3395	274	8.1%	798	23.5%
Kaonoulu Street at Kenolio Drive	AM	366	556	677	190	28.1%	121	17.9%
	PM	364	583	926	219	23.7%	343	37.0%
	SAT	273	532	961	259	27.0%	429	44.6%
Kaonoulu Street at Alulike Drive	AM	200	347	450	147	32.7%	103	22.9%
	PM	272	486	780	214	27.4%	294	37.7%
	SAT	246	537	905	291	32.2%	368	40.7%
Piilani Highway at Piikea Avenue	AM	3385	3641	3841	256	6.7%	200	5.2%
	PM	3679	3938	4511	259	5.7%	573	12.7%
	SAT	2930	3203	3920	273	7.0%	717	18.3%

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 lanes 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 150 seconds for the afternoon peak hour. The morning peak hour traffic signal cycle lengths are 125 seconds. These are the existing signal cycle lengths.
4. The mitigation measures to accommodate 2018 background traffic as described in the previous chapter are 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 18](#) and the results of the Level-of-Service analysis of the unsignalized intersections are summarized in [Table 19](#).

Table 18 2018 Background Plus Project Levels-of-Service - Signalized Intersections

Intersection and Movement	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Promenade Without Honouaula			With Promenade With Honouaula			Without Promenade Without Honouaula			With Promenade With Honouaula			Without Promenade Without Honouaula			With Promenade With Honouaula		
	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	0.77	25.8	C	0.82	29.9	C	0.77	34.3	C	0.90	44.2	D	.62	18.8	B	0.80	24.3	C
Eastbound Left	0.46	51.7	D	0.46	51.7	D	0.62	72.7	E	0.72	84.2	F	0.57	37.7	D	0.54	38.2	D
Eastbound Left & Thru	0.41	51.1	D	0.41	51.1	D	0.63	73.1	E	0.72	83.4	F	0.59	38.4	D	0.56	38.8	D
Eastbound Right	0.05	47.6	D	0.06	47.7	D	0.06	61.7	E	0.08	63.7	E	0.09	32.2	C	0.39	36.1	D
Westbound Left	0.60	55.9	E	0.63	56.6	E	0.69	72.8	E	0.78	80.7	F	0.63	48.2	D	0.80	68.6	E
Westbound Left & Thru	0.63	56.9	E	0.65	58.0	E	0.72	74.2	E	0.80	83.1	F	0.55	42.4	D	0.81	70.1	E
Westbound Right	0.12	48.3	D	0.12	47.9	D	0.24	60.1	E	0.43	62.2	E	0.03	35.8	C	0.03	37.4	D
Northbound Left	0.27	74.8	E	0.32	58.9	E	0.69	85.4	F	0.82	86.6	F	0.43	38.8	D	0.83	77.0	E
Northbound Thru	0.69	14.1	B	0.76	18.6	B	0.76	13.9	B	0.87	28.1	C	0.60	14.9	B	0.75	18.2	B
Northbound Right	0.03	2.2	A	0.04	17.1	B	0.05	2.3	A	0.08	11.3	B	0.07	10.2	B	0.10	10.1	B
Southbound Left	0.46	65.2	E	0.46	66.4	E	0.62	63.4	D	0.73	65.2	E	0.30	34.4	C	0.37	38.1	D
Southbound Thru	0.83	19.1	B	0.92	25.8	C	0.74	33.8	C	0.90	43.7	D	0.60	12.7	B	0.81	18.6	B
Southbound Right	0.07	2.4	A	0.07	4.1	A	0.07	35.6	D	0.07	33.0	C	0.07	8.3	A	0.07	9.2	A
Piilani Hwy at Kaiwahine St	0.60	24.5	C	0.63	26.6	C	0.65	22.1	C	0.74	26.9	C	0.58	10.0	B	0.71	15.1	B
Eastbound Left	0.66	56.8	E	0.66	56.8	E	0.65	75.9	E	0.63	73.7	E	0.44	33.0	C	0.35	37.2	D
Eastbound Thru	0.06	44.1	D	0.06	44.1	D	0.12	62.2	E	0.11	61.7	E	0.07	29.1	C	0.06	34.3	C
Eastbound Right	0.07	44.3	D	0.08	44.4	D	0.05	61.7	E	0.08	61.5	E	0.04	28.9	C	0.08	34.5	C
Westbound Left	0.33	47.3	D	0.41	48.3	D	0.27	63.9	E	0.56	69.5	E	0.30	31.2	C	0.55	40.9	D
Westbound Thru	0.10	44.5	D	0.10	44.5	D	0.26	63.5	E	0.25	63.0	E	0.21	30.0	C	0.17	35.1	D
Westbound Right	0.07	44.3	D	0.07	44.3	D	0.05	61.6	E	0.05	61.2	E	0.03	28.9	C	0.03	34.2	C
Northbound Left	0.25	38.0	D	0.33	32.5	C	0.47	79.2	E	0.62	76.5	E	0.33	34.3	C	0.56	43.4	D
Northbound Thru	0.60	19.7	B	0.64	22.5	C	0.65	18.2	B	0.74	23.5	C	0.53	6.7	A	0.64	10.2	B
Northbound Right	0.04	26.7	C	0.05	26.3	C	0.08	10.2	B	0.11	13.2	B	0.04	4.3	A	0.07	5.8	A
Southbound Left	0.37	44.4	D	0.37	45.5	D	0.63	83.5	F	0.63	82.9	F	0.67	45.2	D	0.53	41.8	D
Southbound Thru	0.56	20.3	C	0.63	22.6	C	0.60	12.3	B	0.71	17.2	B	0.62	7.2	A	0.77	12.8	B
Southbound Right	0.01	13.3	B	0.01	16.9	B	0.05	5.0	A	0.05	6.7	A	0.03	3.8	A	0.03	5.6	A
Piilani Hwy at N. Kihei Rd	0.61	29.6	C	0.64	29.6	C	0.78	36.5	D	0.85	39.9	D	0.61	17.1	B	0.69	19.0	B
Eastbound Left	0.57	59.7	E	0.58	58.9	E	0.75	56.8	E	0.74	55.6	E	0.46	29.8	C	0.54	37.8	D
Eastbound Left & Thru	0.59	60.9	E	0.60	59.8	E	0.78	59.6	E	0.77	58.1	E	0.46	29.8	C	0.54	37.8	D
Eastbound Right	0.22	59.9	E	0.28	54.4	D	0.13	58.2	E	0.23	39.5	D	0.14	15.6	B	0.33	20.4	C
Westbound Left, Thru & Rt	0.20	58.3	E	0.22	59.0	E	0.58	73.5	E	0.58	73.5	E	0.02	32.5	C	0.02	38.5	D
Northbound Left	0.71	42.1	D	0.74	44.5	D	0.84	72.9	E	0.94	85.0	F	0.54	27.4	C	0.69	34.3	C
Northbound Thru & Right	0.54	19.0	B	0.56	18.7	B	0.56	16.9	B	0.61	18.7	B	0.50	8.7	A	0.51	7.9	A
Southbound Left	0.19	63.6	E	0.21	64.4	E	0.46	78.4	E	0.46	78.4	E	0.35	38.3	D	0.41	46.3	D
Southbound Thru	0.66	23.0	C	0.68	23.8	C	0.76	32.5	C	0.86	39.0	D	0.80	20.6	C	0.81	21.4	C
Southbound Right	0.08	14.7	B	0.08	14.8	B	0.16	20.0	C	0.17	21.4	C	0.11	11.8	B	0.11	11.7	B
N. Kihei Rd at S. Kihei Rd	0.40	20.5	C	0.42	20.2	C	0.58	24.5	C	0.64	28.6	C	0.59	10.1	B	0.61	12.5	B
Eastbound Thru	0.27	9.9	A	0.30	10.5	B	0.42	19.8	B	0.51	21.8	C	0.39	10.1	B	0.54	14.0	B
Eastbound Right	0.18	9.2	A	0.19	9.5	A	0.36	18.8	B	0.42	20.1	C	0.27	9.3	A	0.30	11.7	B
Westbound Left	0.59	68.9	E	0.59	70.5	E	0.71	98.7	F	0.71	99.7	F	0.57	21.2	C	0.51	24.5	C
Westbound Thru	0.17	1.1	A	0.19	1.1	A	0.15	2.1	A	0.19	1.8	A	0.14	3.3	A	0.18	4.2	A
Northbound Left	0.77	54.8	D	0.77	54.5	D	0.37	49.7	D	0.43	50.7	D	0.52	17.9	B	0.52	21.8	C
Northbound Right	0.13	0.0	A	0.13	0.0	A	0.12	0.0	A	0.12	46.1	D	0.10	0.0	A	0.10	0.0	A

Table 18 2018 Background Plus Projects Levels-of-Service - Signalized Intersections (Continued)

Intersection and Movement	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Promenade Without Honouaula			With Promenade With Honouaula			Without Promenade Without Honouaula			With Promenade With Honouaula			Without Promenade Without Honouaula			With Promenade With Honouaula		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Kaonoulu St	0.79	16.1	B	0.78	32.9	C	0.74	13.0	B	0.88	50.5	D	0.61	6.1	A	0.87	37.2	D
Eastbound Left	0.36	55.5	E	0.48	59.8	E	0.45	70.2	E	0.57	91.8	F	0.27	21.0	C	0.51	41.9	D
Eastbound Thru				0.26	53.7	D				0.66	85.0	F				0.64	41.4	D
Eastbound Right	0.42	56.3	E	0.64	48.4	D	0.13	66.6	E	0.62	75.1	E	0.46	22.4	C	0.39	30.5	C
Westbound Left				0.74	70.0	E				0.90	78.7	E				0.97	62.3	E
Westbound Thru				0.50	56.6	E				0.52	66.4	E				0.54	31.4	C
Westbound Right				0.05	42.4	D				0.40	44.8	D				0.36	15.5	B
Northbound Left	0.62	43.2	D	0.55	38.6	D	0.72	71.9	E	0.57	84.0	F	0.59	8.6	A	0.74	54.0	D
Northbound Thru	0.39	7.9	A	0.52	26.8	C	0.56	4.1	A	0.90	51.0	D	0.46	4.1	A	0.94	49.4	D
Northbound Right				0.05	36.4	D				0.28	13.6	B				0.48	16.5	B
Southbound Left				0.53	41.3	D				0.89	86.8	F				0.96	56.5	E
Southbound Thru	0.68	12.7	B	0.80	26.1	C	0.63	9.0	A	0.70	28.7	C	0.52	4.4	A	0.73	25.4	C
Southbound Right	0.05	13.4	B	0.05	26.2	C	0.07	7.6	A	0.08	16.8	B	0.08	2.9	A	0.08	17.4	B
S. Kihei Rd at Kaonoulu St	0.45	6.2	A	0.47	6.6	A	0.50	8.4	A	0.66	15.9	B	0.44	6.4	A	0.55	7.2	A
Westbound Left	0.42	23.8	C	0.42	20.8	C	0.46	28.4	C	0.57	22.6	C	0.48	23.6	C	0.55	15.4	B
Westbound Right	0.03	21.5	C	0.05	18.6	B	0.03	25.4	C	0.08	18.6	B	0.02	20.8	C	0.08	12.5	B
Northbound Thru	0.45	3.5	A	0.49	4.7	A	0.49	6.1	A	0.63	10.9	B	0.44	3.6	A	0.55	6.0	A
Northbound Right	0.06	2.3	A	0.08	3.2	A	0.11	4.3	A	0.16	7.3	A	0.09	2.5	A	0.16	4.2	A
Southbound Left	0.06	2.3	A	0.14	3.5	A	0.70	48.5	D	0.95	79.1	E	0.10	2.5	A	0.43	5.8	A
Southbound Thru	0.30	2.9	A	0.33	4.0	A	0.40	2.6	A	0.45	4.3	A	0.37	3.3	A	0.46	5.4	A
Piilani Hwy at Kulanihako St	0.76	15.5	B	0.81	16.7	B	0.66	10.8	B	0.79	15.1	B	0.53	6.4	A	0.67	8.1	A
Eastbound Left & Thru	0.37	54.2	D	0.52	57.0	E	0.51	72.0	E	0.64	75.2	E	0.29	28.2	C	0.57	41.3	D
Eastbound Right	0.27	53.1	D	0.37	54.1	D	0.06	65.8	E	0.06	62.1	E	0.06	26.6	C	0.06	34.5	C
Westbound Left & Thru	0.61	62.3	E	0.66	67.4	E	0.47	71.3	E	0.39	66.2	E	0.00	0.0	A	0.00	0.0	A
Westbound Right	0.02	50.8	D	0.02	50.8	D	0.01	65.4	E	0.01	61.6	E	0.00	0.0	A	0.00	0.0	A
Northbound Left	0.51	74.1	E	0.60	85.6	F	0.60	67.0	E	0.60	64.7	E	0.73	73.4	E	0.44	44.0	D
Northbound Thru	0.54	9.7	A	0.58	10.0	B	0.68	4.6	A	0.80	8.5	A	0.48	3.1	A	0.63	4.2	A
Northbound Right	0.08	4.3	A	0.08	3.1	A	0.02	2.1	A	0.02	3.9	A	0.00	0.0	A	0.00	0.0	A
Southbound Left	0.51	63.0	E	0.55	56.9	E	0.32	57.3	E	0.32	77.5	E	0.00	0.0	A	0.00	0.0	A
Southbound Thru	0.76	12.4	B	0.80	14.5	B	0.64	8.4	A	0.80	14.8	B	0.53	5.7	A	0.68	8.4	A
Southbound Right	0.02	5.5	A	0.03	7.7	A	0.06	7.8	A	0.09	5.4	A	0.05	3.7	A	0.07	4.3	A
Piilani Hwy at Piikea Ave	0.80	19.7	B	0.84	21.6	C	0.78	30.8	C	0.92	32.3	C	0.79	17.4	B	0.91	28.4	C
Eastbound Left	0.86	67.2	E	0.89	70.4	E	0.86	77.1	E	0.97	93.6	F	0.79	30.8	C	0.92	55.5	E
Eastbound Right	0.16	42.1	D	0.24	41.3	D	0.17	50.8	D	0.25	47.3	D	0.17	18.2	B	0.18	24.8	C
Northbound Left	0.67	65.1	E	0.76	77.3	E	0.85	79.9	E	0.85	79.9	E	0.77	35.5	D	0.91	75.1	E
Northbound Thru	0.46	7.0	A	0.51	8.3	A	0.61	9.5	A	0.73	14.8	B	0.51	7.0	A	0.65	12.3	B
Southbound Thru	0.80	17.2	B	0.84	19.3	B	0.72	32.3	C	0.91	31.5	C	0.80	21.4	C	0.90	32.7	C
Southbound Right	0.28	10.5	B	0.32	11.6	B	0.34	31.6	C	0.47	17.7	B	0.26	13.5	B	0.33	18.2	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 D for Level-of-Service Analysis Worksheets without Promenade without Honouaula conditions
- (4) See Appendix F for Level-of-Service Analysis Worksheets with Promenade with Honouaula conditions.

Table 19 2018 Background Plus Project Levels-of-Service - Unsignalized Intersections

Intersection and Movement	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
	Without Promenade Without Honuaua		With Promenade With Honuaua		Without Promenade Without Honuaua		With Promenade With Honuaua		Without Promenade Without Honuaua		With Promenade With Honuaua	
	Delay ¹	LOS ²	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Kaonoulu St at Kenolio Rd	6.9	A	6.9	A	5.1	A	6.8	A	6.4	A	6.2	A
Eastbound Left	7.6	A	7.8	A	7.7	A	8.3	A	8.1	A	8.4	A
Westbound Left	7.5	A	7.6	A	7.6	A	8.0	A	7.7	A	8.1	A
Northbound Left	11.2	B	12.5	B	12.8	B	19.1	C	17.9	C	19.6	C
Northbound Thru & Right	9.4	A	9.9	A	10.2	B	12.3	B	11.5	B	13.1	B
Southbound Left	16.0	C	20.4	C	16.2	C	39.0	E	27.7	D	39.5	E
Southbound Thru & Right	9.5	A	10.0	B	11.0	B	14.2	B	12.0	B	12.6	B
Kaonoulu St at Alulike St	2.8	A	2.4	A	2.7	A	1.9	A	3.4	A	2.4	A
Eastbound Left	7.5	A	7.6	A	7.7	A	8.1	A	7.7	A	8.2	A
Westbound Left	7.5	A	7.6	A	7.7	A	8.0	A	7.6	A	8.1	A
Northbound Left, Thru & Right	11.7	B	12.8	B	11.9	B	15.5	C	12.6	B	18.5	C
Southbound Left, Thru & Right	9.2	A	9.6	A	9.7	A	11.2	B	10.3	B	12.8	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 D](#) for Level-of-Service Analysis Worksheets for Without Project conditions.
- (4) See [Appendix F](#) 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 20](#). Drive A, which is the only signalized driveway, will operate at Level-of-Service A during the morning peak hour, Level-of-Service D during the afternoon peak hour and Level-of-Service C during the Saturday. Drives B, C and D will operate at Level-of-Service A during all peak hours.

Mitigation Measures

[Table 21](#) summarizes the recommended mitigation.

Table 20 2018 Levels-of-Service of Project Driveways

Intersection and Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	With Promenade With Honouaula			With Promenade With Honouaula			With Promenade With Honouaula		
	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C	Delay	LOS	V/C	Delay	LOS
E. Kaonoulu Street at Drive A	0.13	7.7	A	0.61	33.9	C	0.72	32.2	C
Eastbound Left	0.15	8.0	A	0.62	40.9	D	0.76	40.8	D
Eastbound Thru	0.05	7.3	A	0.17	20.5	C	0.20	15.9	B
Eastbound Right	0.06	7.6	A	0.20	24.3	D	0.30	16.9	B
Westbound Left	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
Westbound Thru & Right	0.13	7.4	A	0.75	39.3	D	0.84	42.4	D
Northbound Left	0.07	7.5	A	0.62	34.5	C	0.79	39.3	D
Northbound Thru & Right	0.02	0.0	A	0.04	12.2	A	0.07	12.8	B
Southbound Left & Thru	0.01	0.0	A	0.14	27.4	C	0.14	28.6	C
Southbound Right	0.04	7.5	A	0.12	27.1	C	0.12	28.4	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	1.3	A	nc	1.7	A	nc	1.6	A
Southbound Right	nc	9.7	A	nc	16.0	C	nc	19.7	C
E. Kaonoulu Street at Drive C	nc	7.7	A	nc	16.4	B	nc	8.9	A
Eastbound Left	nc	7.3	A	nc	7.5	A	nc	7.5	A
Westbound Left	nc	0.0	A	nc	0.0	A	nc	0.0	A
Northbound Left	nc	10.9	B	nc	28.5	D	nc	47.0	E
Northbound Thru & Right	nc	0.0	A	nc	0.0	A	nc	0.0	A
Southbound Left & Thru	nc	0.0	A	nc	0.0	A	nc	0.0	A
Southbound Right	nc	8.8	A	nc	8.7	A	nc	8.8	A
E. Kaonoulu Street at Drive D	nc	4.3	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 F](#) for Level-of-Service Analysis Worksheets.
- (5) nc = not calculated.

Table 21 Summary of Recommended Mitigation Measures Conditions

Location	Mitigation Required to Mitigate 2018 Background Conditions (These improvements are to be implemented by others)	Improvements Recommended As Part of Piilani Promenade Project	Additional Mitigation Required to Mitigate 2018 Background Plus Project
Overall			1. Provide set backs along East Kaonoulu Street at all project driveways for future right turn decelerations lanes . (Required by SDOT)
Piilani Highway at Ohukai Street	<ol style="list-style-type: none"> 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. 3. Modify the southbound approach to provide an additional left turn lane. 		No additional mitigation required
Piilani Highway at Kaiwahine St and Uwapo Road	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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			No additional mitigation required

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 22](#). 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 22 Roundabout Analysis of Piilani Highway at Kaonoulu Street

Approach	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	High V/C	Low V/C	High V/C	Low V/C	High V/C	Low V/C
Eastbound	1.49	2.12	2.61	3.92	2.97	4.44
Westbound	0.87	1.16	3.75	5.17	2.84	3.69
Northbound	1.32	1.60	2.95	3.73	3.06	3.99
Southbound	1.87	2.29	3.03	3.87	3.26	4.23

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. TRAFFIC IMPACTS OF HONUUA'ULA DEVELOPMENT

The following chapter discusses the impacts of the Honua'ula Affordable Housing Project. The Honua'ula Affordable Housing Project is not part of the Piilani Promenade Project, nor is it considered a related background project, for the reasons discussed previously (page 17). However, if completed, Honua'ula Affordable Housing Project traffic would impact traffic along East Kaonoulu Road and is discussed in this chapter in response to public comments.

2018 Background Plus Project Plus Honua'ula Level-of-Service Analysis

The level-of-service analysis was performed using traffic conditions for background plus project plus mitigation roadway conditions and the traffic projections presented at the end of Chapter 4. The results of the Level-of-Service analysis of the signalized intersections are summarized in [Table 23](#) and the results of the Level-of-Service analysis of the unsignalized intersections are summarized in [Table 24](#).

Table 23 2018 Background Plus Project Plus Honuaula Levels-of-Service - Signalized Intersections

Intersection and Movement	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	Without Promenade Without Honuaula			With Promenade With Honuaula			Without Promenade Without Honuaula			With Promenade With Honuaula			Without Promenade Without Honuaula			With Promenade With Honuaula		
	V/C	Delay	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	0.82	29.4	C	0.82	29.9	C	0.86	43.4	D	0.90	44.2	D	0.79	24.1	C	0.80	24.3	C
Eastbound Left	0.46	51.7	D	0.46	51.7	D	0.72	84.2	F	0.72	84.2	F	0.53	37.5	D	0.54	38.2	D
Eastbound Left & Thru	0.41	51.1	D	0.41	51.1	D	0.72	83.4	F	0.72	83.4	F	0.55	38.0	D	0.56	38.8	D
Eastbound Right	0.06	47.7	D	0.06	47.7	D	0.08	63.7	E	0.08	63.7	E	0.38	35.5	D	0.39	36.1	D
Westbound Left	0.63	56.6	E	0.63	56.6	E	0.78	80.7	F	0.78	80.7	F	0.80	69.8	E	0.80	68.6	E
Westbound Left & Thru	0.65	58.0	E	0.65	58.0	E	0.80	83.1	F	0.80	83.1	F	0.82	71.4	E	0.81	70.1	E
Westbound Right	0.12	47.9	D	0.12	47.9	D	0.42	62.1	E	0.43	62.2	E	0.03	37.2	D	0.03	37.4	D
Northbound Left	0.32	58.7	E	0.32	58.9	E	0.82	86.6	F	0.82	86.6	F	0.82	74.6	E	0.83	77.0	E
Northbound Thru	0.74	17.9	B	0.76	18.6	B	0.86	27.2	C	0.87	28.1	C	0.75	18.0	B	0.75	18.2	B
Northbound Right	0.04	17.6	B	0.04	17.1	B	0.08	11.3	B	0.08	11.3	B	0.10	10.2	B	0.10	10.1	B
Southbound Left	0.46	66.5	E	0.46	66.4	E	0.73	65.1	E	0.73	65.2	E	0.37	37.7	D	0.37	38.1	D
Southbound Thru	0.91	24.6	C	0.92	25.8	C	0.87	41.9	D	0.90	43.7	D	0.79	18.3	B	0.81	18.6	B
Southbound Right	0.07	3.7	A	0.07	4.1	A	0.07	34.0	C	0.07	33.0	C	0.07	9.3	A	0.07	9.2	A
Piilani Hwy at Kaiwahine St	0.62	26.5	C	0.63	26.6	C	0.73	26.5	C	0.74	26.9	C	0.70	14.9	B	0.71	15.1	B
Eastbound Left	0.66	56.8	E	0.66	56.8	E	0.63	73.7	E	0.63	73.7	E	0.35	36.8	D	0.35	37.2	D
Eastbound Thru	0.06	44.1	D	0.06	44.1	D	0.11	61.7	E	0.11	61.7	E	0.06	34.0	C	0.06	34.3	C
Eastbound Right	0.08	44.4	D	0.08	44.4	D	0.08	61.5	E	0.08	61.5	E	0.08	34.1	C	0.08	34.5	C
Westbound Left	0.41	48.3	D	0.41	48.3	D	0.56	69.5	E	0.56	69.5	E	0.55	40.3	D	0.55	40.9	D
Westbound Thru	0.10	44.5	D	0.10	44.5	D	0.25	63.0	E	0.25	63.0	E	0.17	34.8	C	0.17	35.1	D
Westbound Right	0.07	44.3	D	0.07	44.3	D	0.05	61.2	E	0.05	61.2	E	0.03	33.8	C	0.03	34.2	C
Northbound Left	0.33	32.8	C	0.33	32.5	C	0.62	76.7	E	0.62	76.5	E	0.56	42.9	D	0.56	43.4	D
Northbound Thru	0.62	21.9	C	0.64	22.5	C	0.73	22.9	C	0.74	23.5	C	0.63	10.0	B	0.64	10.2	B
Northbound Right	0.05	27.1	C	0.05	26.3	C	0.11	13.5	B	0.11	13.2	B	0.07	5.8	A	0.07	5.8	A
Southbound Left	0.37	44.9	D	0.37	45.5	D	0.63	83.3	F	0.63	82.9	F	0.53	41.9	D	0.53	41.8	D
Southbound Thru	0.62	22.6	C	0.63	22.6	C	0.69	16.6	B	0.71	17.2	B	0.75	12.5	B	0.77	12.8	B
Southbound Right	0.01	16.4	B	0.01	16.9	B	0.05	6.9	A	0.05	6.7	A	0.03	5.7	A	0.03	5.6	A
Piilani Hwy at N. Kihei Rd	0.63	29.5	C	0.64	29.6	C	0.84	39.4	D	0.85	39.9	D	0.65	16.4	B	0.69	19.0	B
Eastbound Left	0.58	59.4	E	0.58	58.9	E	0.75	56.6	E	0.74	55.6	E	0.53	35.9	D	0.54	37.8	D
Eastbound Left & Thru	0.61	60.5	E	0.60	59.8	E	0.78	59.2	E	0.77	58.1	E	0.53	35.9	D	0.54	37.8	D
Eastbound Right	0.28	54.8	D	0.28	54.4	D	0.22	40.9	D	0.23	39.5	D	0.35	22.0	C	0.33	20.4	C
Westbound Left, Thru & Rt	0.22	59.0	E	0.22	59.0	E	0.58	73.5	E	0.58	73.5	E	0.02	37.3	D	0.02	38.5	D
Northbound Left	0.73	44.7	D	0.74	44.5	D	0.93	84.9	F	0.94	85.0	F	0.42	31.8	C	0.69	34.3	C
Northbound Thru & Right	0.54	18.3	B	0.56	18.7	B	0.60	18.2	B	0.61	18.7	B	0.51	8.0	A	0.51	7.9	A
Southbound Left	0.21	64.4	E	0.21	64.4	E	0.46	78.4	E	0.46	78.4	E	0.39	44.3	D	0.41	46.3	D
Southbound Thru	0.67	23.4	C	0.68	23.8	C	0.83	37.3	D	0.86	39.0	D	0.75	17.2	B	0.81	21.4	C
Southbound Right	0.08	14.7	B	0.08	14.8	B	0.17	21.2	C	0.17	21.4	C	0.11	10.0	B	0.11	11.7	B
N. Kihei Rd at S. Kihei Rd	0.42	20.3	C	0.42	20.2	C	0.64	28.5	C	0.64	28.6	C	0.61	12.5	B	0.61	12.5	B
Eastbound Thru	0.30	10.5	B	0.30	10.5	B	0.50	21.7	C	0.51	21.8	C	0.53	13.9	B	0.54	14.0	B
Eastbound Right	0.19	9.5	A	0.19	9.5	A	0.41	20.0	B	0.42	20.1	C	0.30	11.8	B	0.30	11.7	B
Westbound Left	0.59	70.2	E	0.59	70.5	E	0.70	98.4	F	0.71	99.7	F	0.51	24.5	C	0.51	24.5	C
Westbound Thru	0.18	1.1	A	0.19	1.1	A	0.19	1.8	A	0.19	1.8	A	0.18	4.2	A	0.18	4.2	A
Northbound Left	0.77	54.5	D	0.77	54.5	D	0.43	50.7	D	0.43	50.7	D	0.52	21.6	C	0.52	21.8	C
Northbound Right	0.13	0.0	A	0.13	0.0	A	0.12	46.1	D	0.12	46.1	D	0.10	0.0	A	0.10	0.0	A

Table 23 2018 Background Plus Project Plus Honuaua Levels-of-Service - Signalized Intersections (Continued)

Intersection and Movement	AM Peak Hour						PM Peak Hour						Saturday Peak Hour					
	With Promenade Without Honuaua			With Promenade With Honuaua			With Promenade Without Honuaua			With Promenade With Honuaua			With Promenade Without Honuaua			With Promenade With Honuaua		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Piilani Hwy at Kaonoulu St	0.78	33.0	C	0.78	32.9	C	0.86	48.4	D	0.88	50.5	D	0.84	35.1	D	0.87	37.2	D
Eastbound Left	0.48	59.8	E	0.48	59.8	E	0.57	91.8	F	0.57	91.8	F	0.51	41.9	D	0.51	41.9	D
Eastbound Thru	0.26	53.7	D	0.26	53.7	D	0.61	83.6	F	0.66	85.0	F	0.60	40.3	D	0.64	41.4	D
Eastbound Right	0.64	48.4	D	0.64	48.4	D	0.63	76.2	E	0.62	75.1	E	0.39	30.5	C	0.39	30.5	C
Westbound Left	0.74	70.0	E	0.74	70.0	E	0.89	77.1	E	0.90	78.7	E	0.93	53.9	D	0.97	62.3	E
Westbound Thru	0.50	56.6	E	0.50	56.6	E	0.51	66.4	E	0.52	66.4	E	0.50	30.7	C	0.54	31.4	C
Westbound Right	0.05	42.4	D	0.05	42.4	D	0.39	45.4	D	0.40	44.8	D	0.34	15.3	B	0.36	15.5	B
Northbound Left	0.55	38.7	D	0.55	38.6	D	0.57	84.0	F	0.57	84.0	F	0.74	54.0	D	0.74	54.0	D
Northbound Thru	0.52	26.9	C	0.52	26.8	C	0.88	48.1	D	0.90	51.0	D	0.94	49.4	D	0.94	49.4	D
Northbound Right	0.05	36.6	D	0.05	36.4	D	0.25	12.8	B	0.28	13.6	B	0.48	16.2	B	0.48	16.5	B
Southbound Left	0.53	41.5	D	0.53	41.3	D	0.82	80.3	F	0.89	86.8	F	0.92	49.2	D	0.96	56.5	E
Southbound Thru	0.80	26.1	C	0.80	26.1	C	0.69	27.5	C	0.70	28.7	C	0.73	25.4	C	0.73	25.4	C
Southbound Right	0.05	25.2	C	0.05	26.2	C	0.08	16.1	B	0.08	16.8	B	0.08	17.4	B	0.08	17.4	B
S. Kihei Rd at Kaonoulu St	0.46	6.3	A	0.47	6.6	A	0.62	15.8	B	0.66	15.9	B	0.54	7.1	A	0.55	7.2	A
Westbound Left	0.41	21.3	C	0.42	20.8	C	0.55	25.0	C	0.57	22.6	C	0.53	15.5	B	0.55	15.4	B
Westbound Right	0.04	19.1	B	0.05	18.6	B	0.08	21.2	C	0.08	18.6	B	0.08	12.7	B	0.08	12.5	B
Northbound Thru	0.48	4.5	A	0.49	4.7	A	0.59	10.5	B	0.63	10.9	B	0.54	6.0	A	0.55	6.0	A
Northbound Thru	0.08	3.1	A	0.08	3.2	A	0.18	7.2	A	0.16	7.3	A	0.15	4.2	A	0.16	4.2	A
Southbound Left	0.13	3.3	A	0.14	3.5	A	0.94	80.2	F	0.95	79.1	E	0.40	5.6	A	0.43	5.8	A
Southbound Thru	0.32	3.8	A	0.33	4.0	A	0.44	4.4	A	0.45	4.3	A	0.46	5.4	A	0.46	5.4	A
Piilani Hwy at Kulanihako'i St	0.79	16.5	B	0.81	16.7	B	0.77	14.9	B	0.79	15.1	B	0.66	8.0	A	0.67	8.1	A
Eastbound Left & Thru	0.52	57.0	E	0.52	57.0	E	0.64	76.2	E	0.64	75.2	E	0.57	40.7	D	0.57	41.3	D
Eastbound Right	0.35	53.9	D	0.37	54.1	D	0.06	62.1	E	0.06	62.1	E	0.06	34.2	C	0.06	34.5	C
Westbound Left & Thru	0.66	67.4	E	0.66	67.4	E	0.39	66.2	E	0.39	66.2	E	0.00	0.0	A	0.00	0.0	A
Westbound Right	0.02	50.8	D	0.02	50.8	D	0.01	61.6	E	0.01	61.6	E	0.00	0.0	A	0.00	0.0	A
Northbound Left	0.60	85.9	F	0.60	85.6	F	0.60	64.8	E	0.60	64.7	E	0.44	43.7	D	0.44	44.0	D
Northbound Thru	0.58	9.9	A	0.58	10.0	B	0.78	8.2	A	0.80	8.5	A	0.62	4.2	A	0.63	4.2	A
Northbound Right	0.08	3.1	A	0.08	3.1	A	0.02	3.9	A	0.02	3.9	A	0.00	0.0	A	0.00	0.0	A
Southbound Left	0.55	56.6	E	0.55	56.9	E	0.32	77.5	E	0.32	77.5	E	0.00	0.0	A	0.00	0.0	A
Southbound Thru	0.79	14.0	B	0.80	14.5	B	0.79	14.4	B	0.80	14.8	B	0.67	8.2	A	0.68	8.4	A
Southbound Right	0.03	7.8	A	0.03	7.7	A	0.09	5.4	A	0.09	5.4	A	0.07	4.3	A	0.07	4.3	A
Piilani Hwy at Piikea Ave	0.84	21.4	C	0.84	21.6	C	0.90	30.6	C	0.92	32.3	C	0.89	27.5	C	0.91	28.4	C
Eastbound Left	0.88	68.8	E	0.89	70.4	E	0.95	88.7	F	0.97	93.6	F	0.89	50.7	D	0.92	55.5	E
Eastbound Right	0.24	41.5	D	0.24	41.3	D	0.22	47.7	D	0.25	47.3	D	0.18	24.8	C	0.18	24.8	C
Northbound Left	0.76	77.3	E	0.76	77.3	E	0.85	79.9	E	0.85	79.9	E	0.91	75.1	E	0.91	75.1	E
Northbound Thru	0.51	8.2	A	0.51	8.3	A	0.72	13.9	B	0.73	14.8	B	0.64	12.2	B	0.65	12.3	B
Southbound Thru	0.83	19.2	B	0.84	19.3	B	0.89	29.3	C	0.91	31.5	C	0.89	31.8	C	0.90	32.7	C
Southbound Right	0.30	11.8	B	0.32	11.6	B	0.45	17.0	B	0.47	17.7	B	0.32	18.1	B	0.33	18.2	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 D for Level-of-Service Analysis Worksheets for With Promenade Without Honuaua Conditions.
- (4) See Appendix F for Level-of-Service Analysis Worksheets With Promenade With Honuaua Conditions.

Table 24 2018 Background Plus Project Plus Honua'ula Levels-of-Service - Unsignalized Intersections

Intersection & Movement	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
	With Promenade Without Honuaua		With Promenade With Honuaua		With Promenade Without Honuaua		With Promenade With Honuaua		With Promenade Without Honuaua		With Promenade With Honuaua	
Kaonoulu Street at Kenolio Road	Delay ¹	LOS ²	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
	6.9	A	7.0	A	6.8	A	7.4	A	6.3	A	6.7	A
Eastbound Left	7.8	A	7.8	A	8.3	A	8.4	A	8.4	A	8.4	A
Westbound Left	7.6	A	7.6	A	8.0	A	8.1	A	8.1	A	8.1	A
Northbound Left	12.5	B	12.9	B	19.1	C	20.2	C	19.7	C	20.6	C
Northbound Thru & Right	9.9	A	10.0	A	12.3	B	12.7	B	13.1	B	13.5	B
Southbound Left	20.4	C	21.9	E	39.0	E	44.8	E	39.7	E	44.8	E
Southbound Thru & Right	10.0	B	10.2	B	14.2	B	14.7	B	12.7	B	13.0	B
Kaonoulu Street at Alulike Street	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
	0.21	A	0.21	A	0.39	A	0.41	A	0.42	A	0.44	A
Eastbound Approach	0.21	A	0.21	A	0.39	A	0.41	A	0.42	A	0.44	A
Westbound Approach	0.15	A	0.17	A	0.30	A	0.31	A	0.35	A	0.36	A
Northbound Approach	0.01	A	0.01	A	0.01	A	0.01	A	0.02	A	0.02	A
Southbound Approach	0.07	A	0.08	A	0.08	A	0.08	A	0.13	A	0.13	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.
- (3) See [Appendix E](#) for Level-of-Service Analysis Worksheets for With Promenade Without Honuaua conditions.
- (4) See [Appendix F](#) for Level-of-Service Analysis Worksheets for With Promenade With Honuaua conditions.

Project Driveways Along Kaonoulu Street With Honua'ula

The results of the Level-of-Service analysis of the project driveways are summarized in [Table 25](#).

Table 25 2018 Levels-of-Service of Project Driveways

Intersection and Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	With Promenade With Honuaula			With Promenade With Honuaula			With Promenade With Honuaula		
	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C	Delay	LOS	V/C	Delay	LOS
E. Kaonoulu Street at Drive A	0.13	7.7	A	0.61	33.9	C	0.72	32.2	C
Eastbound Left	0.15	8.0	A	0.62	40.9	D	0.76	40.8	D
Eastbound Thru	0.05	7.3	A	0.17	20.5	C	0.20	15.9	B
Eastbound Right	0.06	7.6	A	0.20	24.3	D	0.30	16.9	B
Westbound Left	0.00	0.0	A	0.00	0.0	A	0.00	0.0	A
Westbound Thru & Right	0.13	7.4	A	0.75	39.3	D	0.84	42.4	D
Northbound Left	0.07	7.5	A	0.62	34.5	C	0.79	39.3	D
Northbound Thru & Right	0.02	0.0	A	0.04	12.2	A	0.07	12.8	B
Southbound Left & Thru	0.01	0.0	A	0.14	27.4	C	0.14	28.6	C
Southbound Right	0.04	7.5	A	0.12	27.1	C	0.12	28.4	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	1.3	A	nc	1.7	A	nc	1.6	A
Southbound Right	nc	9.7	A	nc	16.0	C	nc	19.7	C
E. Kaonoulu Street at Drive C	nc	7.7	A	nc	16.4	B	nc	8.9	A
Eastbound Left	nc	7.3	A	nc	7.5	A	nc	7.5	A
Westbound Left	nc	0.0	A	nc	0.0	A	nc	0.0	A
Northbound Left	nc	10.9	B	nc	28.5	D	nc	47.0	E
Northbound Thru & Right	nc	0.0	A	nc	0.0	A	nc	0.0	A
Southbound Left & Thru	nc	0.0	A	nc	0.0	A	nc	0.0	A
Southbound Right	nc	8.8	A	nc	8.7	A	nc	8.8	A
E. Kaonoulu Street at Drive D	nc	4.3	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 F](#) for Level-of-Service Analysis Worksheets.
- (5) nc = not calculated.

Mitigation Measures

No additional mitigation is required to accommodate traffic generated by the Honua'ula Affordable Housing project.

7. LONG-RANGE FORECASTS

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 (Honua'ula, Wailea Resort and Makena Resort).

Methodology

The *Kihei Master Traffic Plan Study*¹² contained morning and afternoon traffic forecasts for the intersections along Piilani Highway that included traffic associated the 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 Honua'ula.

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

- (1) Kaiwahine Village
- (2) Maui Lu Resort
- (3) Kenolio 6 Residential
- (4) Kihei Residential
- (5) Kihei High School Phases 1 and 2
- (6) Honua'ula Off-site Affordable Housing
- (7) Maui Research and Technology park

¹² Parsons Brinckerhoff Quade & Douglas, *Kihei Master Traffic Plan Study*, Honolulu, HI, September 2003

The resulting morning and afternoon 2025 traffic projections are shown on [Figures 29 and 30](#), respectively. The resulting peak hour projections along East Kaonoulu Street are shown on [Figure 31](#). 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 Honua'ula Affordable Housing project.

The final levels-of-service are summarized in [Tables 26 and 27](#).

Table 26 2025 Levels-of-Service - Signalized Intersections

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	V/C	Delay ¹	LOS ²	V/C	Delay	LOS
Piilani Hwy at Ohukai Rd	0.78	27.5	C	0.98	37.6	D
Eastbound Left	0.52	54.8	D	0.47	83.5	F
Eastbound Thru	0.31	51.9	D	0.43	82.7	F
Eastbound Right	0.06	49.7	D	0.06	78.2	E
Westbound Left	0.77	66.2	E	0.66	88.6	F
Westbound Left & Thru	0.25	49.2	D	0.67	89.5	F
Westbound Right	0.09	47.7	D	0.08	75.0	E
Northbound Left	0.38	51.3	D	0.63	79.0	E
Northbound Thru	0.83	26.1	C	1.00	29.7	C
Northbound Right	0.11	22.8	C	0.13	8.1	A
Southbound Left	0.55	64.1	E	0.85	83.8	F
Southbound Thru	0.84	16.5	B	0.83	32.8	C
Southbound Right	0.03	4.8	A	0.09	19.7	B
Piilani Hwy at Kaiwahine St	0.78	31.8	C	0.87	44.7	D
Eastbound Left	0.09	41.6	D	0.19	71.4	E
Eastbound Thru	0.14	42.0	D	0.44	74.5	E
Eastbound Right	0.04	41.1	D	0.08	70.1	E
Westbound Left	0.72	52.6	D	0.82	97.0	F
Westbound Thru	0.25	43.2	D	0.31	72.7	E
Westbound Right	0.64	51.1	D	0.07	69.9	E
Northbound Left	0.41	32.5	C	0.65	77.8	E
Northbound Thru	0.75	26.6	C	0.89	39.3	D
Northbound Right	0.05	32.0	C	0.14	19.3	B
Southbound Left	0.39	46.3	D	0.73	76.0	E
Southbound Thru	0.63	25.3	C	0.82	37.4	D
Southbound Right	0.01	11.7	B	0.03	14.2	B
Piilani Hwy at N. Kihei Rd	0.63	29.0	C	0.97	58.5	E
Eastbound Left	0.57	59.3	E	0.82	76.9	E
Eastbound Left & Thru	0.59	60.1	E	0.85	81.9	F
Eastbound Right	0.29	34.4	C	0.42	46.6	D
Westbound Left, Thru & Right	0.22	59.0	E	0.92	143.1	F
Northbound Left	0.68	39.5	D	1.14	141.9	F
Northbound Thru & Right	0.61	17.1	B	0.67	20.2	C
Southbound Left	0.27	66.6	E	0.55	105.8	F
Southbound Thru	0.70	30.7	C	0.94	53.3	D
Southbound Right	0.09	20.4	C	0.18	25.0	C
N. Kihei Rd at S. Kihei Rd	0.49	19.7	B	0.64	31.1	c
Eastbound Thru	0.38	13.2	B	0.53	25.4	C
Eastbound Right	0.18	11.0	B	0.46	23.8	C
Westbound Left	0.59	68.1	E	0.66	90.4	F
Westbound Thru	0.29	2.0	A	0.23	1.4	A
Northbound Left	0.79	52.2	D	0.48	62.3	E
Northbound Right	0.13	0.0	A	0.12	56.0	E

Table 26 2025 Levels-of-Service - Signalized Intersections (Continued)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	V/C	Delay ¹	LOS ²	V/C	Delay	LOS
Piilani Hwy at Kaonoulu St	0.82	57.6	E	0.98	62.3	E
Eastbound Left	0.87	74.4	E	0.98	141.2	F
Eastbound Thru	0.18	45.9	D	0.76	92.8	F
Eastbound Right	0.31	35.6	D	0.43	55.6	E
Westbound Left	0.64	73.3	E	0.99	104.9	F
Westbound Thru	0.69	84.4	F	0.98	126.7	F
Westbound Right	0.10	212.8	F	0.56	49.3	D
Northbound Left	0.78	50.1	D	0.83	89.0	F
Northbound Thru	0.59	38.7	D	0.98	66.5	E
Northbound Right	0.11	92.9	F	0.27	14.1	B
Southbound Left	0.72	47.7	D	0.98	114.7	C
Southbound Thru	0.84	33.9	C	0.71	20.5	C
Southbound Right	0.10	39.9	D	0.22	5.5	A
S. Kihei Rd at Kaonoulu St	0.64	7.6	A	0.67	14.9	B
Westbound Left	0.54	23.5	C	0.75	31.3	C
Westbound Right	0.04	19.9	B	0.08	19.4	B
Northbound Thru	0.67	6.6	A	0.68	12.6	B
Northbound Thru	0.11	3.1	A	0.18	7.7	A
Southbound Left	0.24	3.8	A	0.84	54.9	D
Southbound Thru	0.32	3.8	A	0.64	6.5	A
Piilani Hwy at Kulanihakoī St	0.73	24.5	C	0.84	16.7	B
Eastbound Left & Thru	0.30	44.7	D	0.43	79.2	E
Eastbound Right	0.02	41.9	D	0.02	73.6	E
Westbound Left & Thru	0.85	74.5	E	0.75	101.4	F
Westbound Right	0.04	42.0	D	0.02	73.5	E
Northbound Left	0.52	75.2	E	0.64	78.6	E
Northbound Thru	0.68	15.9	B	0.85	11.4	B
Northbound Right	0.21	6.1	A	0.05	4.7	A
Southbound Left	0.68	51.5	D	0.51	80.4	F
Southbound Thru	0.72	25.0	C	0.71	12.8	B
Southbound Right	0.01	13.1	B	0.05	6.5	A
Piilani Hwy at Piikea Ave	0.89	26.6	C	0.89	34.9	C
Eastbound Left	0.92	69.3	E	0.93	90.3	F
Eastbound Right	0.14	36.1	D	0.34	53.9	D
Northbound Left	0.80	72.9	E	0.84	94.4	F
Northbound Thru	0.57	11.5	B	0.80	22.2	C
Southbound Thru	0.89	25.7	C	0.88	29.7	C
Southbound Right	0.20	6.3	A	0.41	10.9	B
Kaonoulu St at Kenolio Rd	0.69	20.1	C	1.00	35.3	D
Eastbound Left	0.20	17.7	B	0.48	19.1	B
Eastbound Thru & Right	0.45	18.8	B	0.43	14.5	B
Westbound Left	0.09	21.5	C	0.11	8.0	A
Westbound Thru & Right	0.76	46.7	D	0.93	44.8	D
Northbound Left	0.03	5.5	A	0.04	16.2	B
Northbound Thru & Right	0.26	7.0	A	0.59	24.1	C
Southbound Left	0.60	12.7	B	1.00	85.6	F
Southbound Thru & Right	0.30	7.2	A	0.48	21.7	C

Table 26 2025 Levels-of-Service - Signalized Intersections (Continued)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	V/C	Delay ¹	LOS ²	V/C	Delay	LOS
Kaonoulu St at Drive A	0.28	34.0	C	0.55	45.3	D
Eastbound Left	0.17	43.2	D	0.68	45.8	D
Eastbound Thru	0.30	35.6	D	0.31	29.2	C
Eastbound Right	0.04	84.6	F	0.16	139.2	F
Westbound Left	0.06	35.8	D	0.42	31.5	C
Westbound Thru & Right	0.43	24.9	C	0.70	37.9	D
Northbound Left	0.09	32.7	C	0.58	38.6	D
Northbound Thru & Right	0.01	31.8	C	0.12	12.1	B
Southbound Left & Thru	0.06	32.5	C	0.14	22.2	C
Southbound Right	0.04	32.2	C	0.12	21.7	C
Kaonoulu Street at Drive C	0.36	17.5	B	0.60	25.8	C
Eastbound Left	0.33	44.0	D	0.58	53.6	D
Eastbound Thru	0.57	21.3	C	0.69	28.5	C
Eastbound Right	0.00	5.6	A	0.02	9.8	A
Westbound Left	0.33	34.8	C	0.41	44.3	D
Westbound Thru & Right	0.32	13.2	B	0.13	23.4	C
Northbound Left	0.13	13.9	B	0.52	19.2	B
Northbound Thru & Right	0.01	12.8	B	0.03	12.5	B
Southbound Left & Thru	0.03	13.0	B	0.02	12.4	B
Southbound Right	0.06	13.2	B	0.04	12.6	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 D](#) for Level-of-Service Analysis Worksheets without Project.
- (4) See [Appendix E](#) for Level-of-Service Analysis Worksheets with Project.

Table 27 2025 Levels-of-Service of Unsignalized Intersections

Intersection and Movement	AM Peak Hour		PM Peak Hour	
	Delay ¹	LOS ²	Delay	LOS
Kaonoulu Street at Alulike Street	1.9	A	1.7	A
Eastbound Left	7.9	A	8.3	A
Westbound Left	7.8	A	8.2	A
Northbound Left, Thru & Right	15.8	B	17.7	B
Southbound Left, Thru & Right	10.6	B	11.9	B
Kaonoulu Street At Drive B South	0.0	A	0.0	A
Northbound Right	0.0	A	0.0	A
Kaonoulu Street at Drive B North	0.6	A	1.9	A
Southbound Right	11.6	B	16.4	C
Kaonoulu Street at Drive D	0.1	A	0.9	A
Northbound Left & Right	16.8	C	13.5	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.

8. 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 28. Also shown are the storage lane length recommended. Figure 32 is a schematic drawing of the proposed lane configurations along East Kaonoulu Street between Piilani Highway and Drive D.

Table 28 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	50	125	29	2	3	75	4	100	1 Lane at 100 ft
		PM	49	180	20	2	3	75	4	100	
		Sat	74	45	80	1	2	50	2	50	
	WB	AM	152	125	29	5	8	200	10	250	2 Lanes with 1300 ft Total
		PM	515	180	20	26	39	975	52	1300	
		Sat	647	45	80	8	12	300	16	400	
	NB	AM	111	125	29	4	6	150	8	200	1 Lane at 350 ft
		PM	135	180	20	7	11	275	14	350	
		Sat	129	45	80	2	3	75	4	100	
	SB	AM	154	125	29	5	8	200	10	250	2 Lanes with 1350 ft Total
		PM	512	180	20	26	39	975	52	1300	
		Sat	704	45	80	9	14	350	18	450	
East Kaonoulu Street at Drive A	EB	AM	131	60	60	2	3	75	4	100	2 Lanes with 500 ft Total
		PM	376	90	40	9	14	350	18	450	
		Sat	414	90	40	10	15	375	20	500	
	WB	AM	0	60	60	0	0	0	0	0	1 lane at 60 ft.
		PM	0	90	40	0	0	0	0	0	
		Sat	0	90	40	0	0	0	0	0	

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

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 29](#). A comparison of the required lengths without versus with the Upcountry Highway as calculated using the AASHTO standards is presented in [Table 30](#).

Table 29 Left Turn Storage Lane Requirements With Upcountry Highway

Intersection	Approach & Time Period		Design Volume	Cycle Length (Seconds)	AASHTO Method						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	1 Lane at 400 ft
		PM	156	180	20	8	12	300	16	400	
	WB	AM	183	125	29	6	9	225	12	300	2 Lanes with 1400 ft Total
		PM	556	180	20	28	42	1050	56	1400	
	NB	AM	149	125	29	5	8	200	10	250	1 Lane at 400 ft
		PM	166	180	20	8	12	300	16	400	
	SB	AM	290	125	29	10	15	375	20	500	2 Lanes with 1250 ft Total
		PM	495	180	20	25	38	950	50	1250	
East Kaonoulu Street at Drive A	EB	AM	123	60	60	2	3	75	4	100	2 Lanes with 450 ft Total
		PM	369	90	40	9	14	350	18	450	
	WB	AM	18	60	60	0	0	0	0	0	1 lane at 60 ft.
		PM	53	90	40	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.
- (2) See [Appendix I](#).

Table 30 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 100 ft	1 lane at 400 ft
	WB	2 lanes with 1300 ft Total	2 lanes with 1400 ft Total
	NB	1 lane at 350 ft	1 lane at 400 ft
	SB	2 lanes with 1350 ft Total	2 lanes with 1250 ft Total
East Kaonoulu Street at Drive A	EB	2 lanes with 500 ft Total	2 lanes with 450 ft Total
	WB	1 lane at 60 ft.	1 lane at 60 ft.

9. 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.

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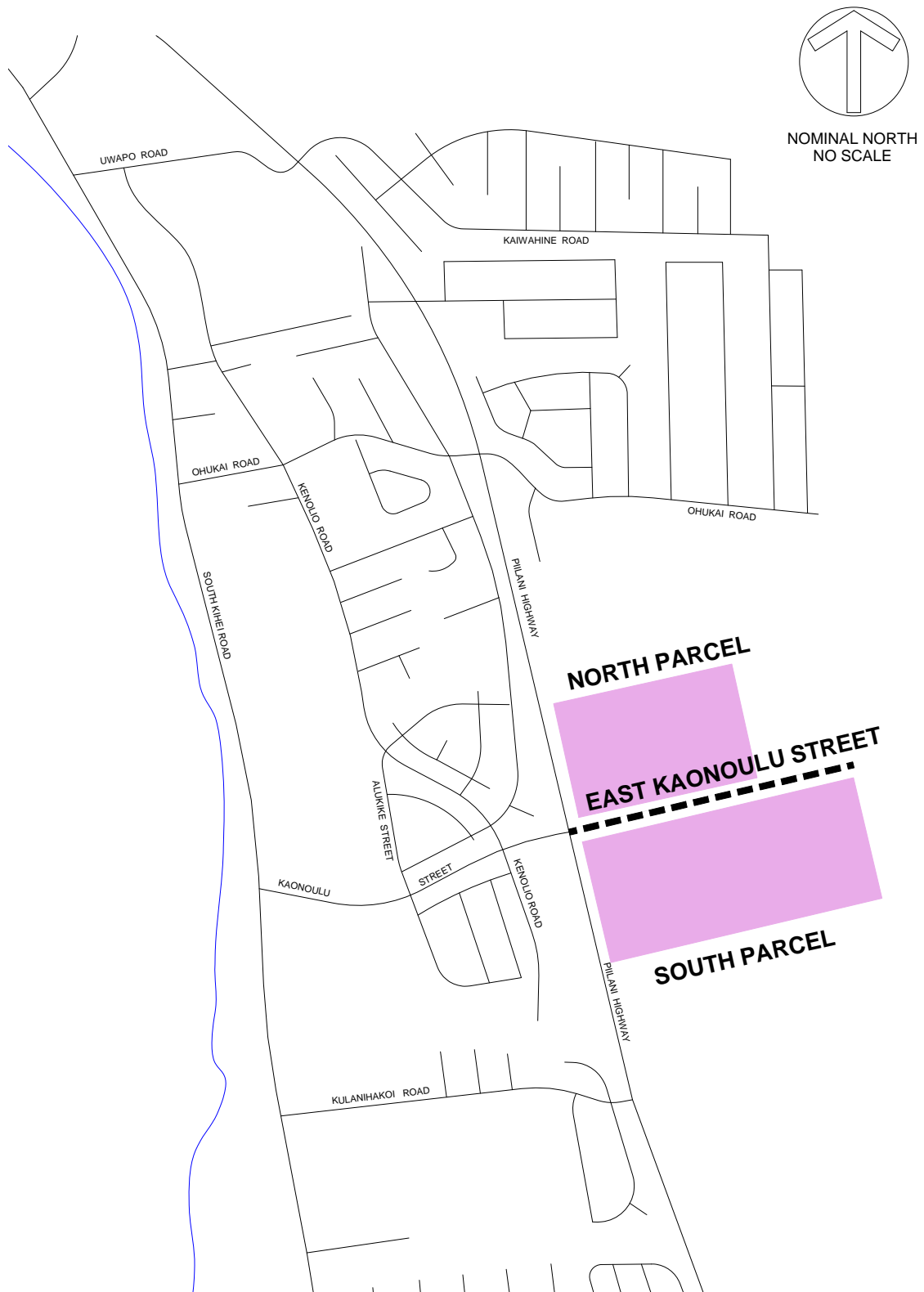


Figure 1
PROJECT LOCATION IN KIHEI

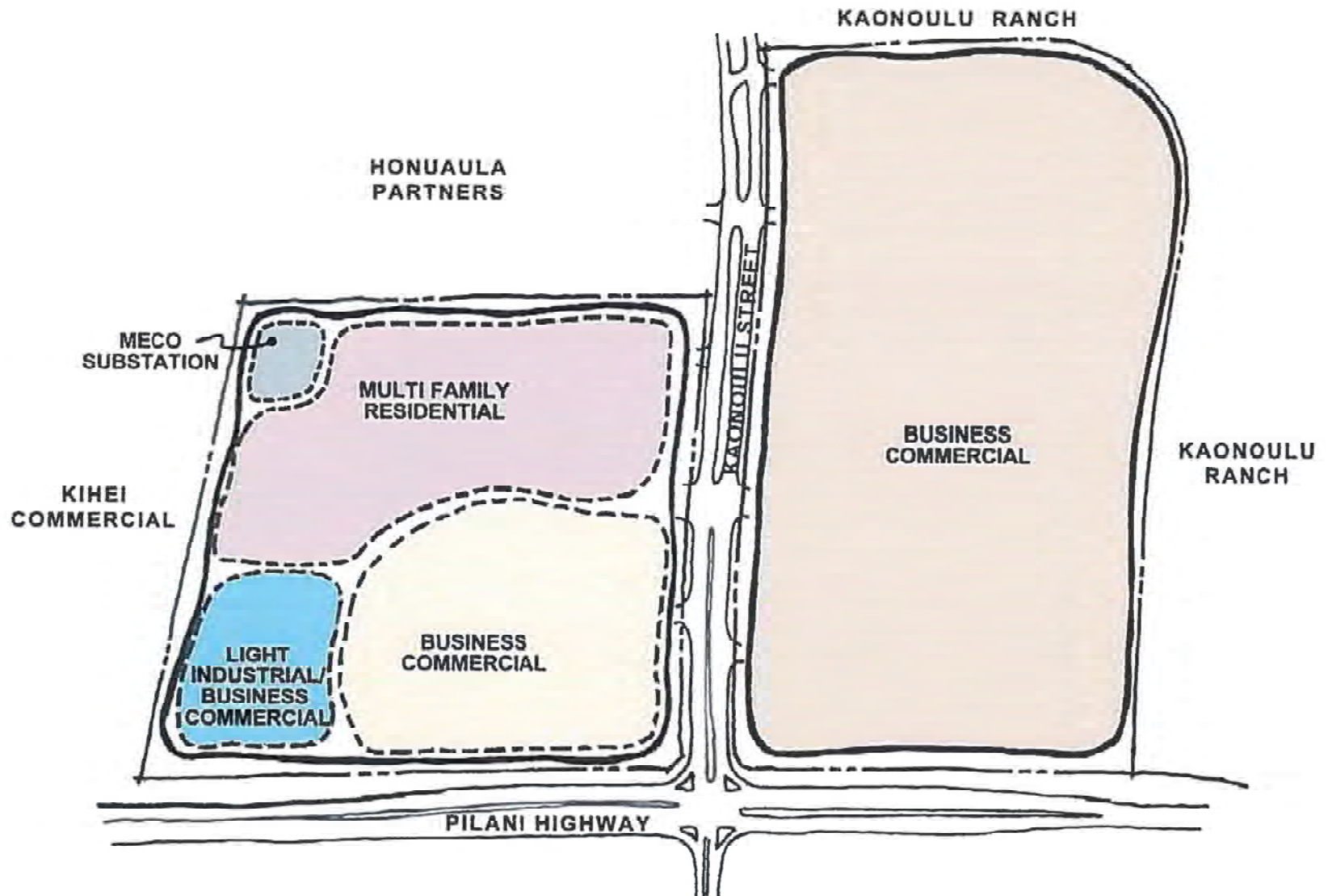


Figure 2
SITE PLAN

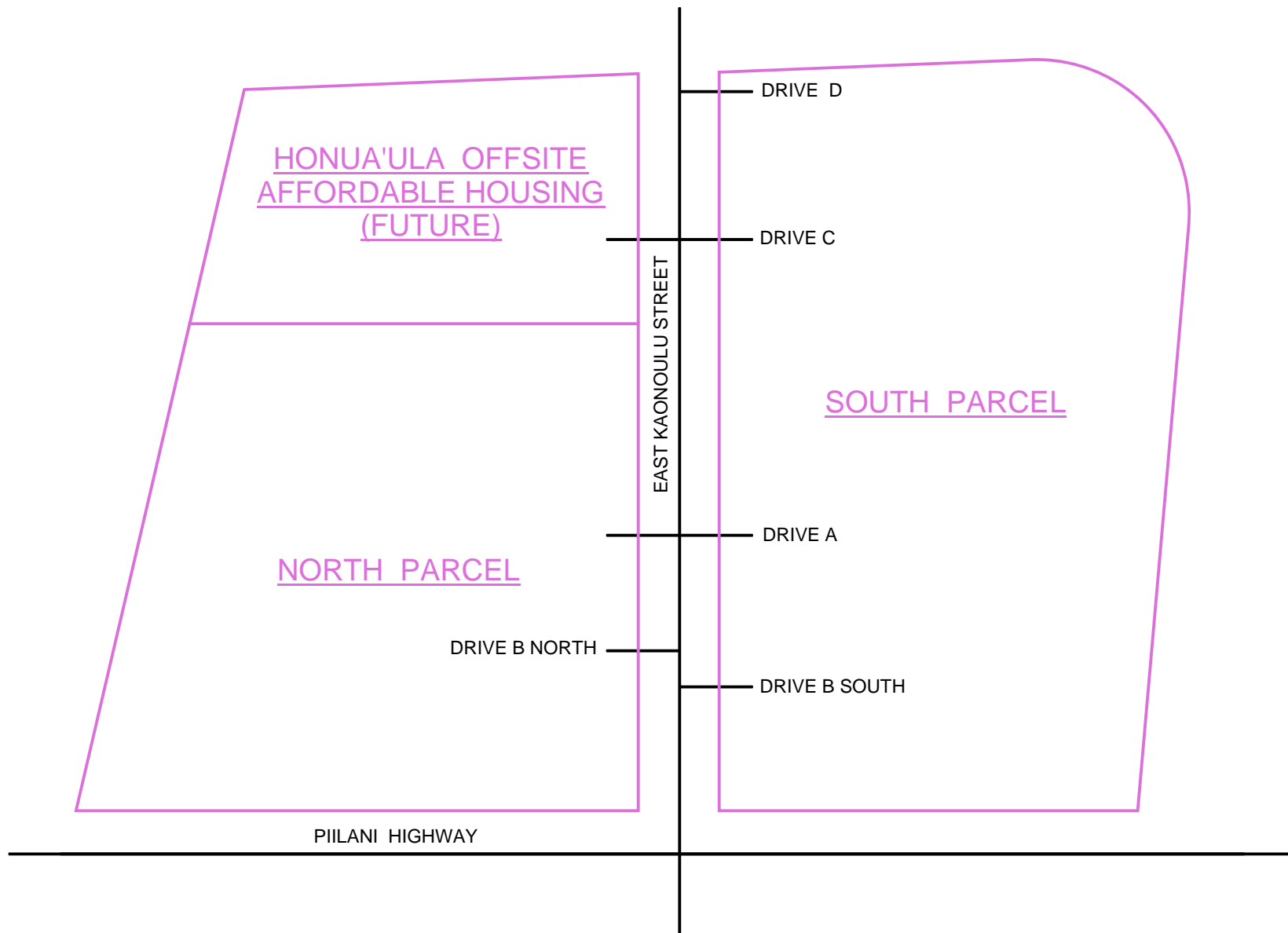


Figure 3
SCHEMATIC DRAWING INDICATING APPROXIMATE LOCATIONS OF PROJECT DRIVEWAYS

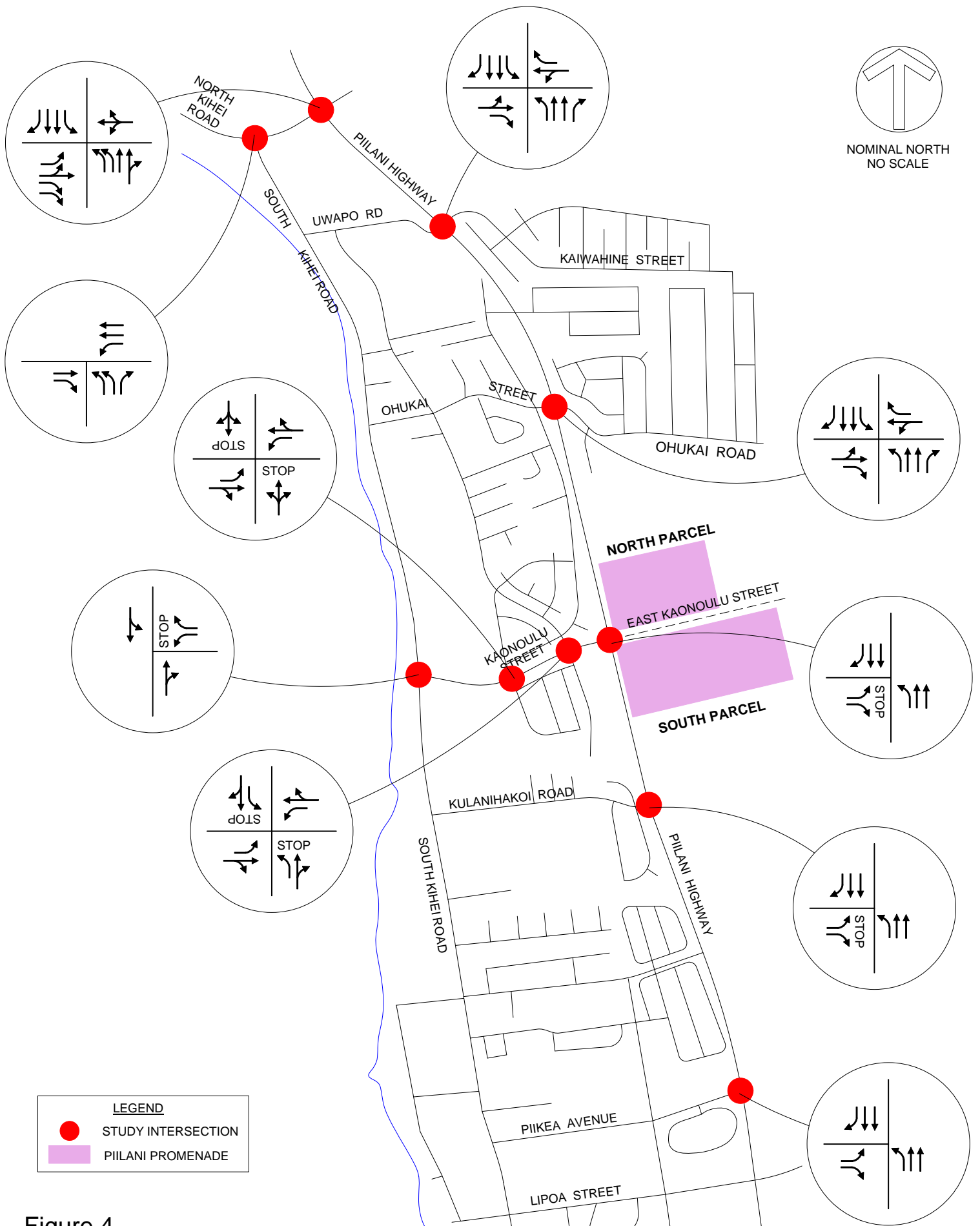


Figure 4
EXISTING LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

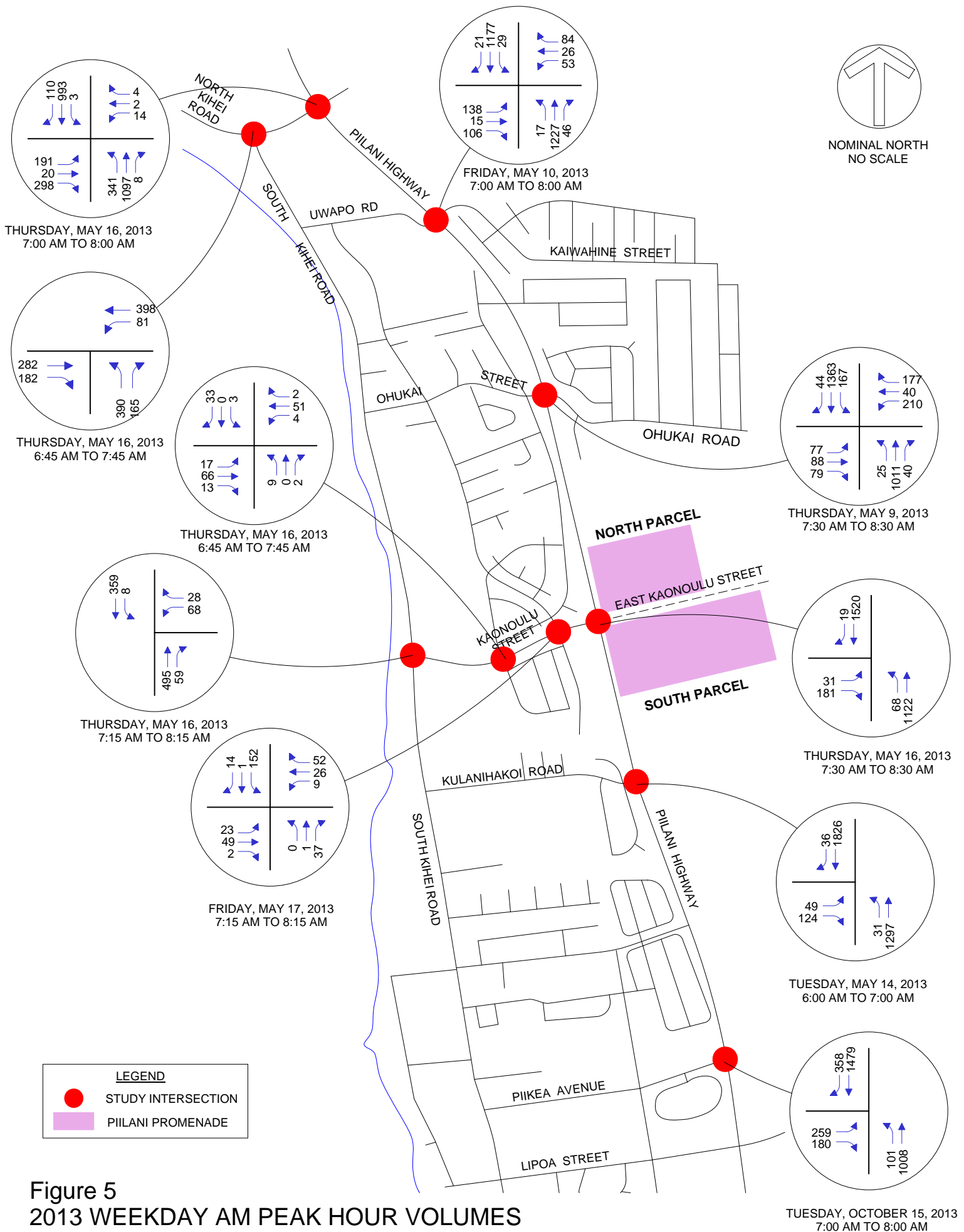


Figure 5
2013 WEEKDAY AM PEAK HOUR VOLUMES

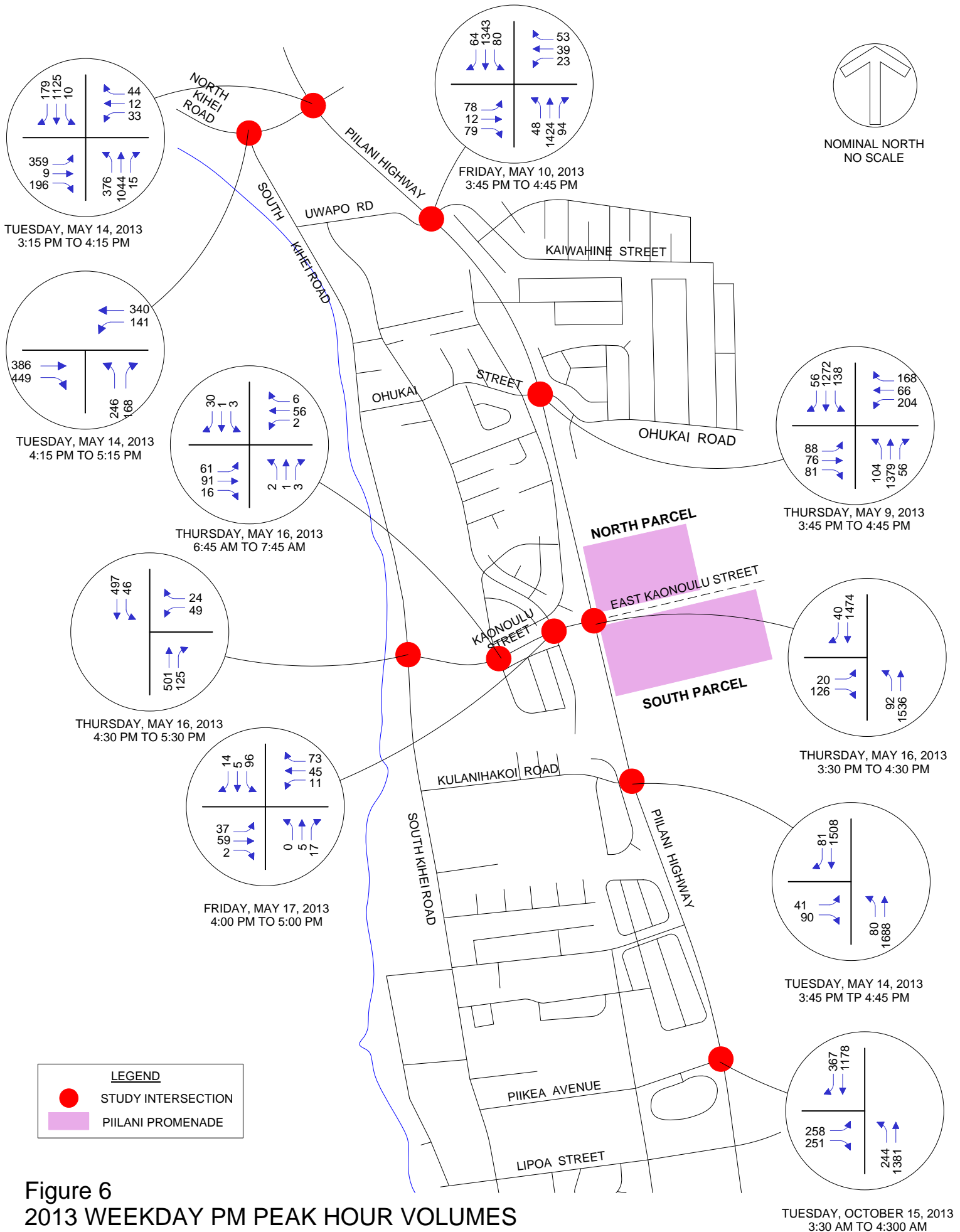


Figure 6
2013 WEEKDAY PM PEAK HOUR VOLUMES

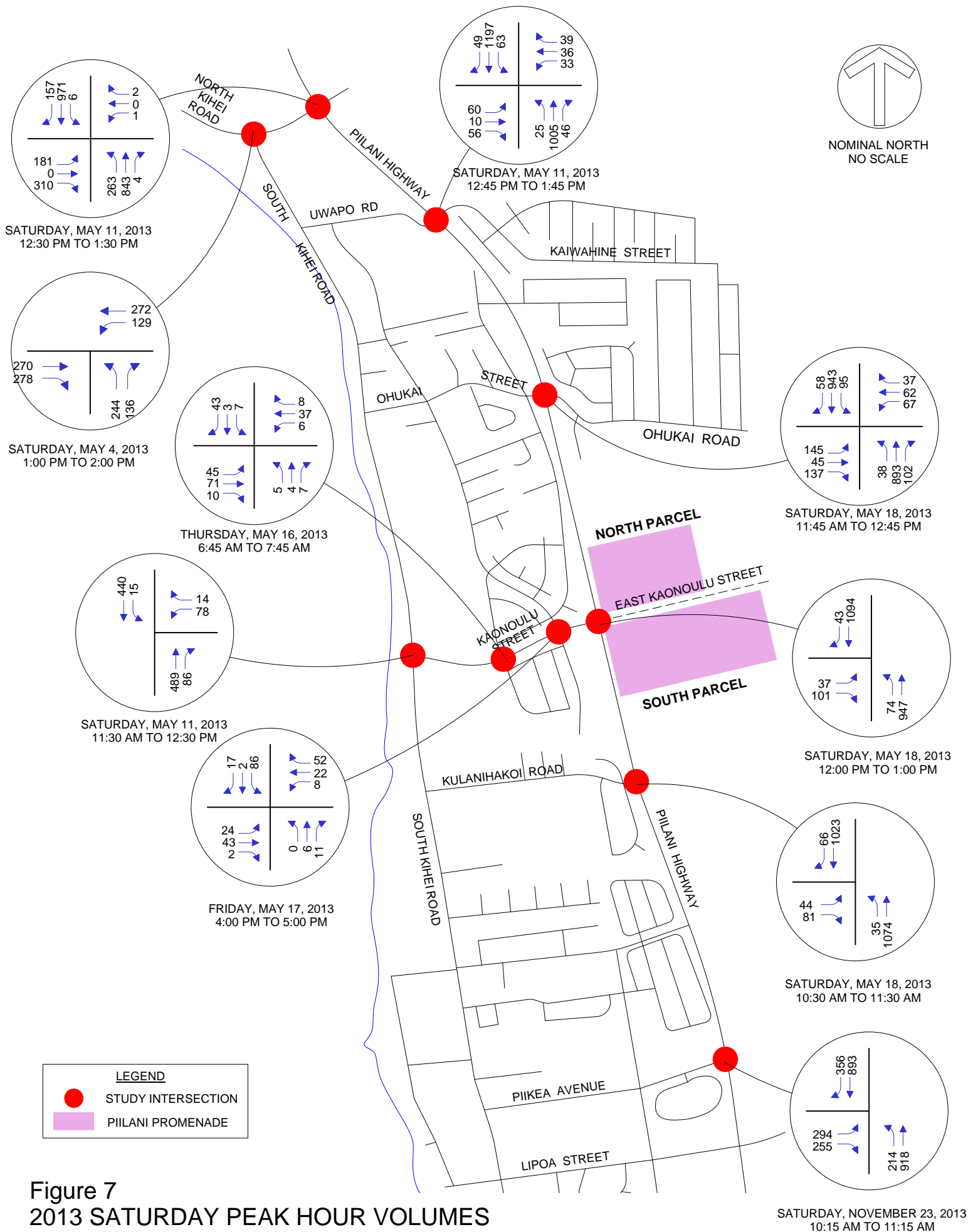


Figure 7
2013 SATURDAY PEAK HOUR VOLUMES

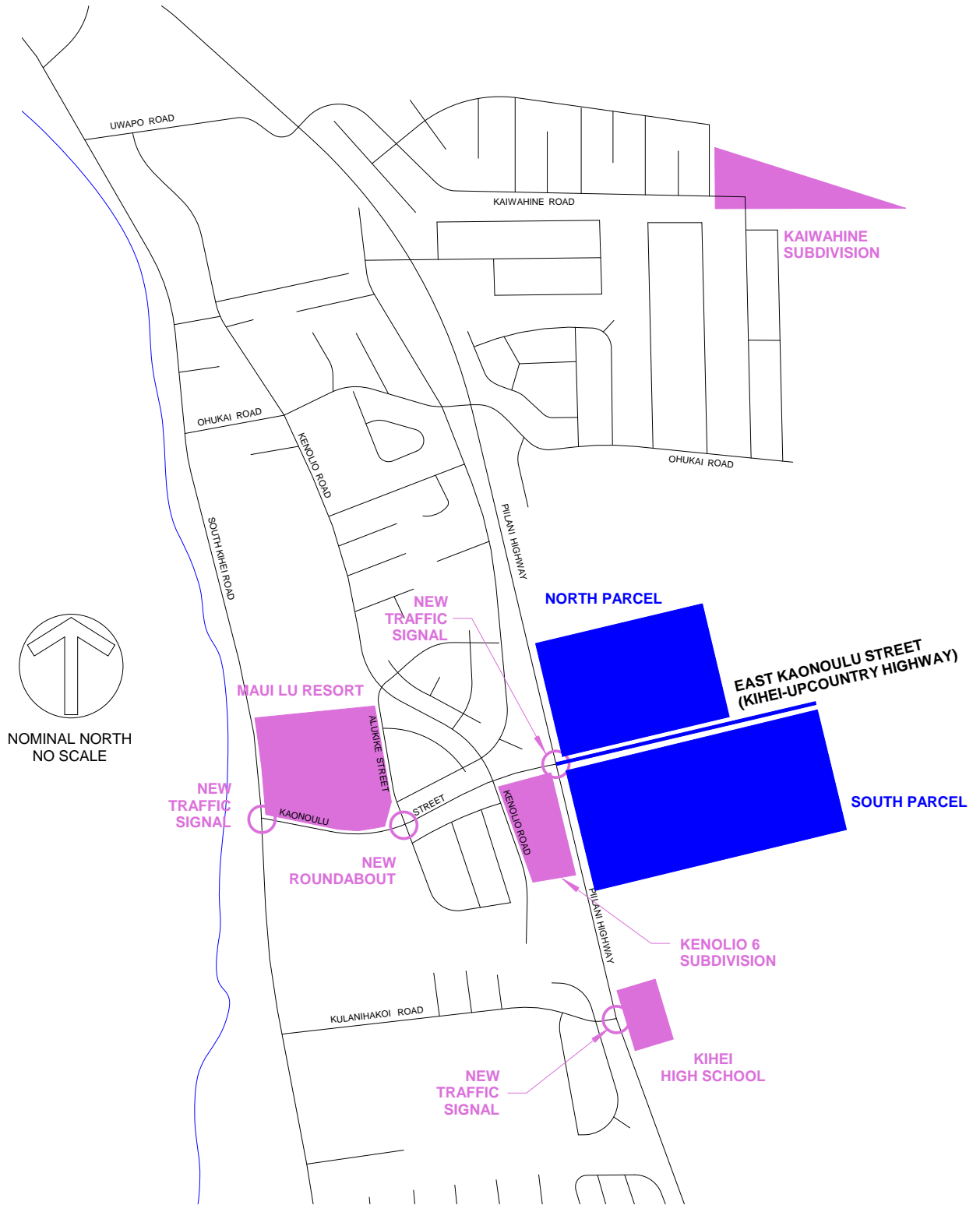


Figure 8
LOCATIONS OF RELATED PROJECTS

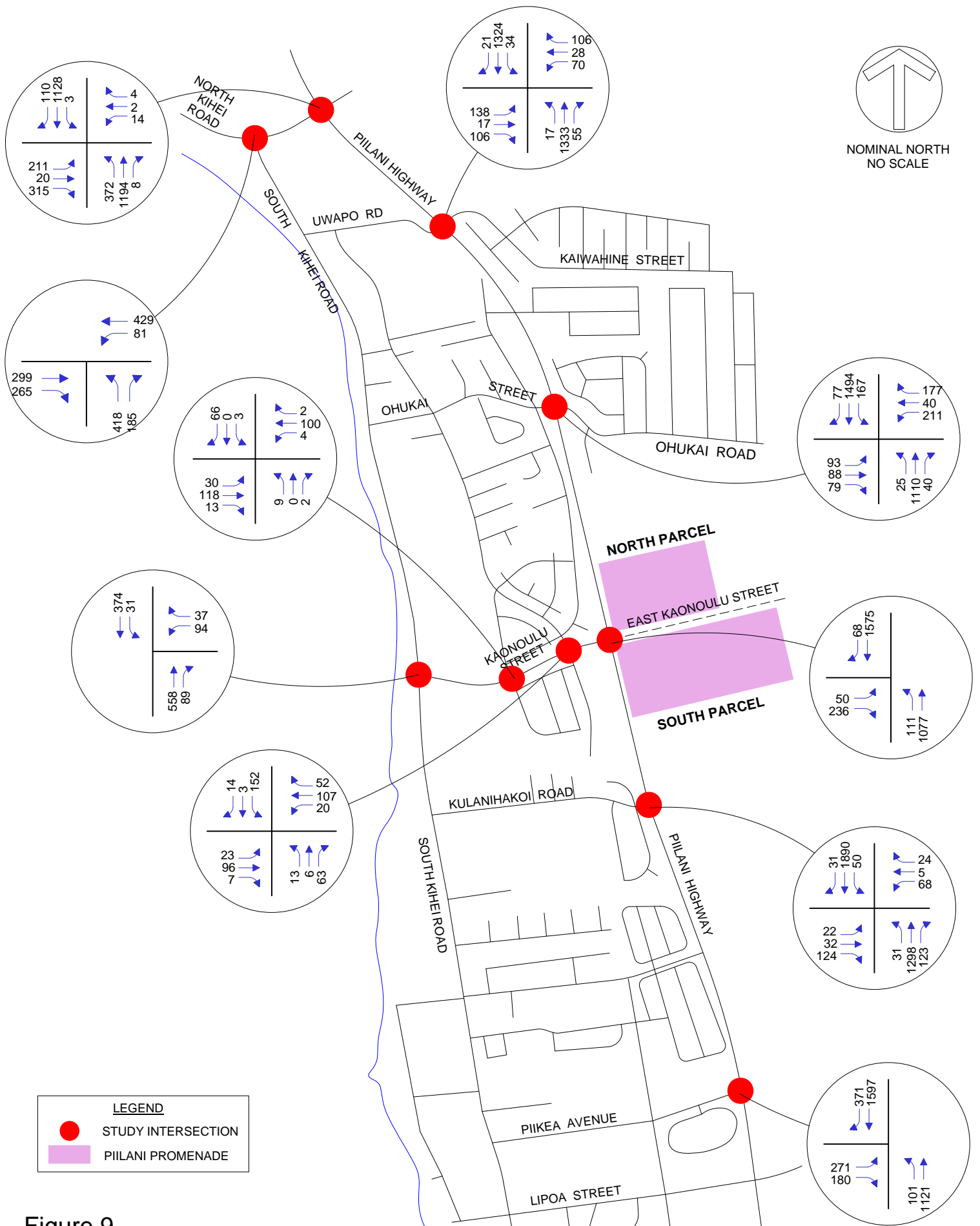


Figure 9
2018 BACKGROUND WEEKDAY AM PEAK HOUR PROJECTIONS

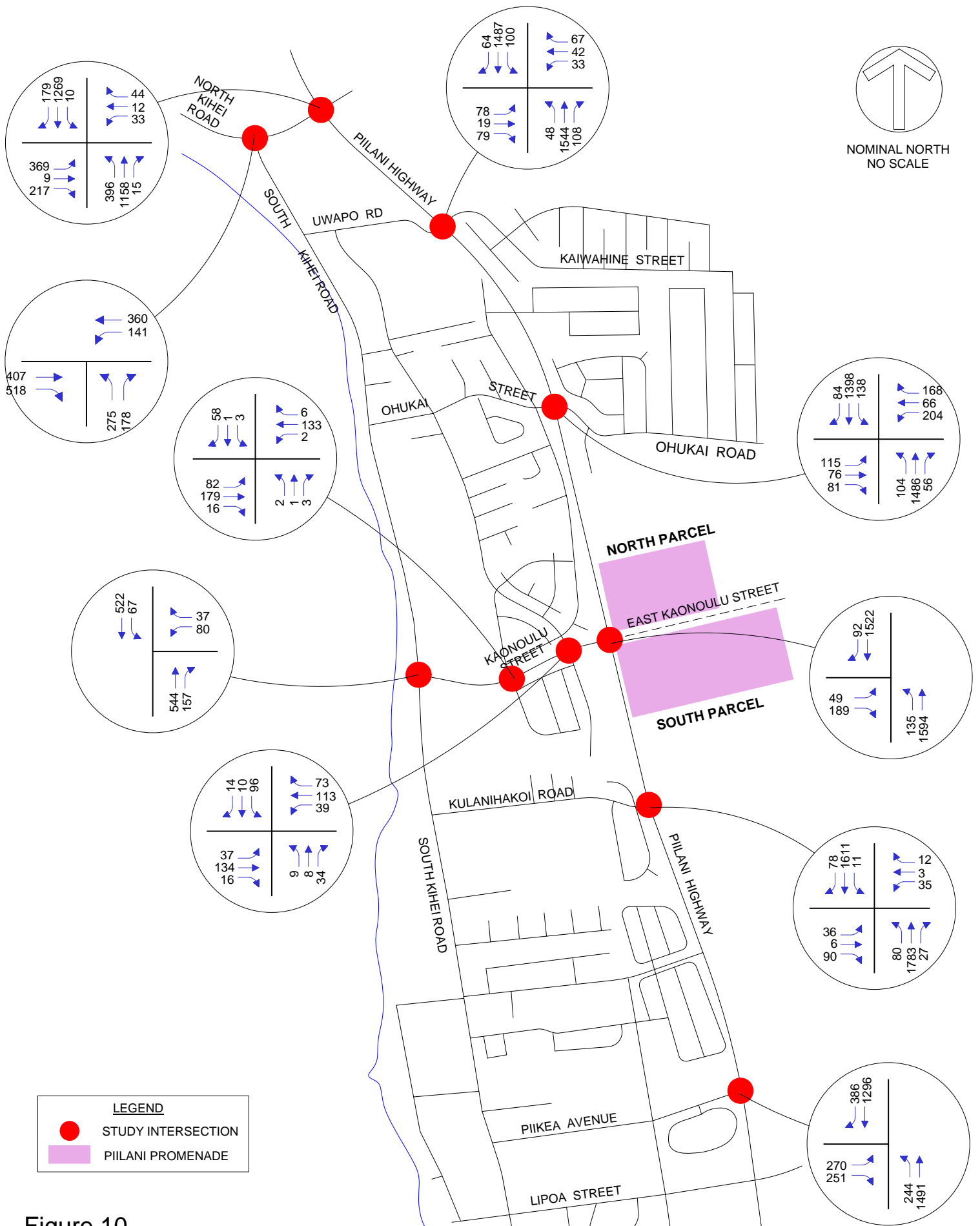


Figure 10
2018 BACKGROUND WEEKDAY PM PEAK HOUR PROJECTIONS

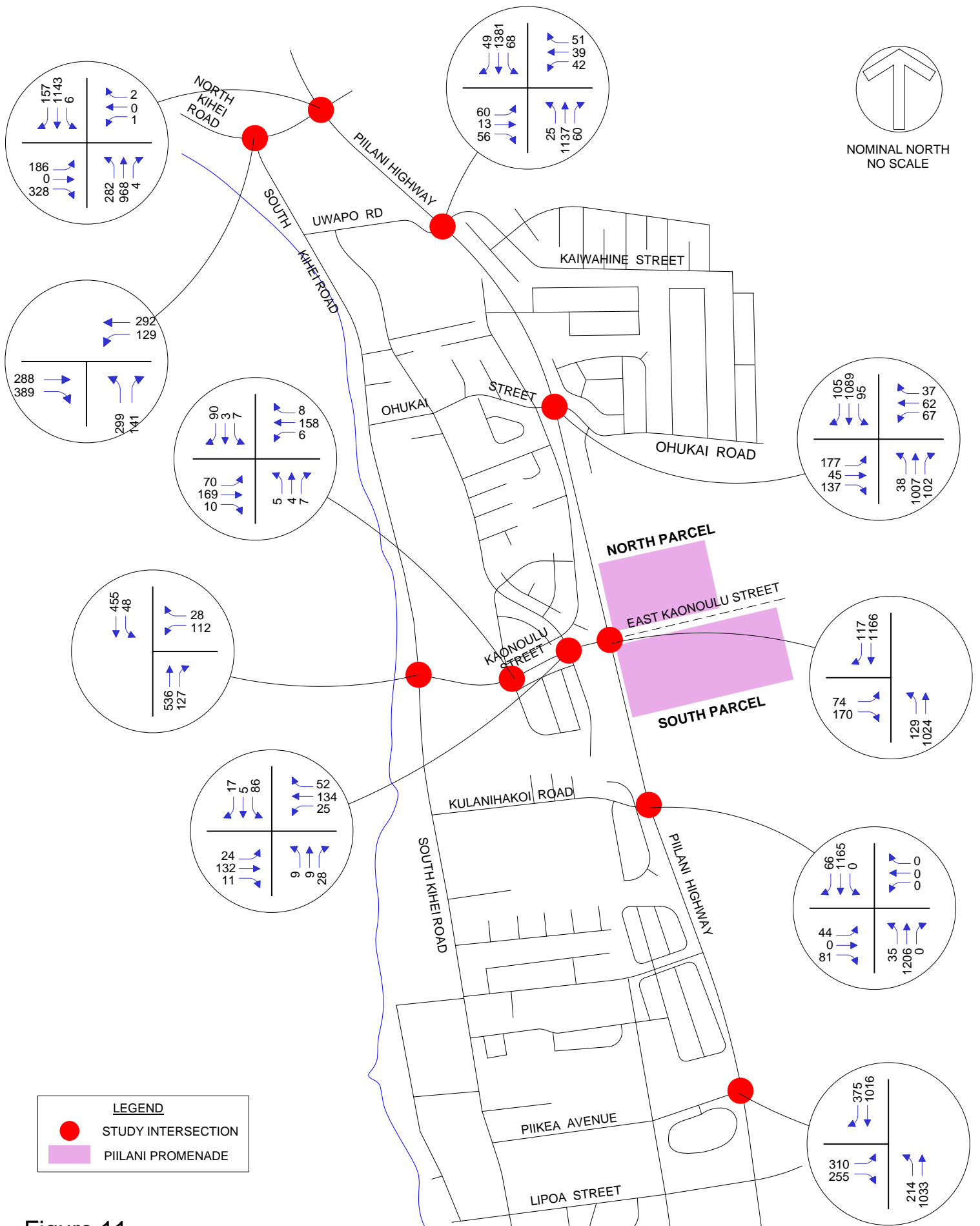


Figure 11
2018 BACKGROUND SATURDAY PEAK HOUR PROJECTIONS

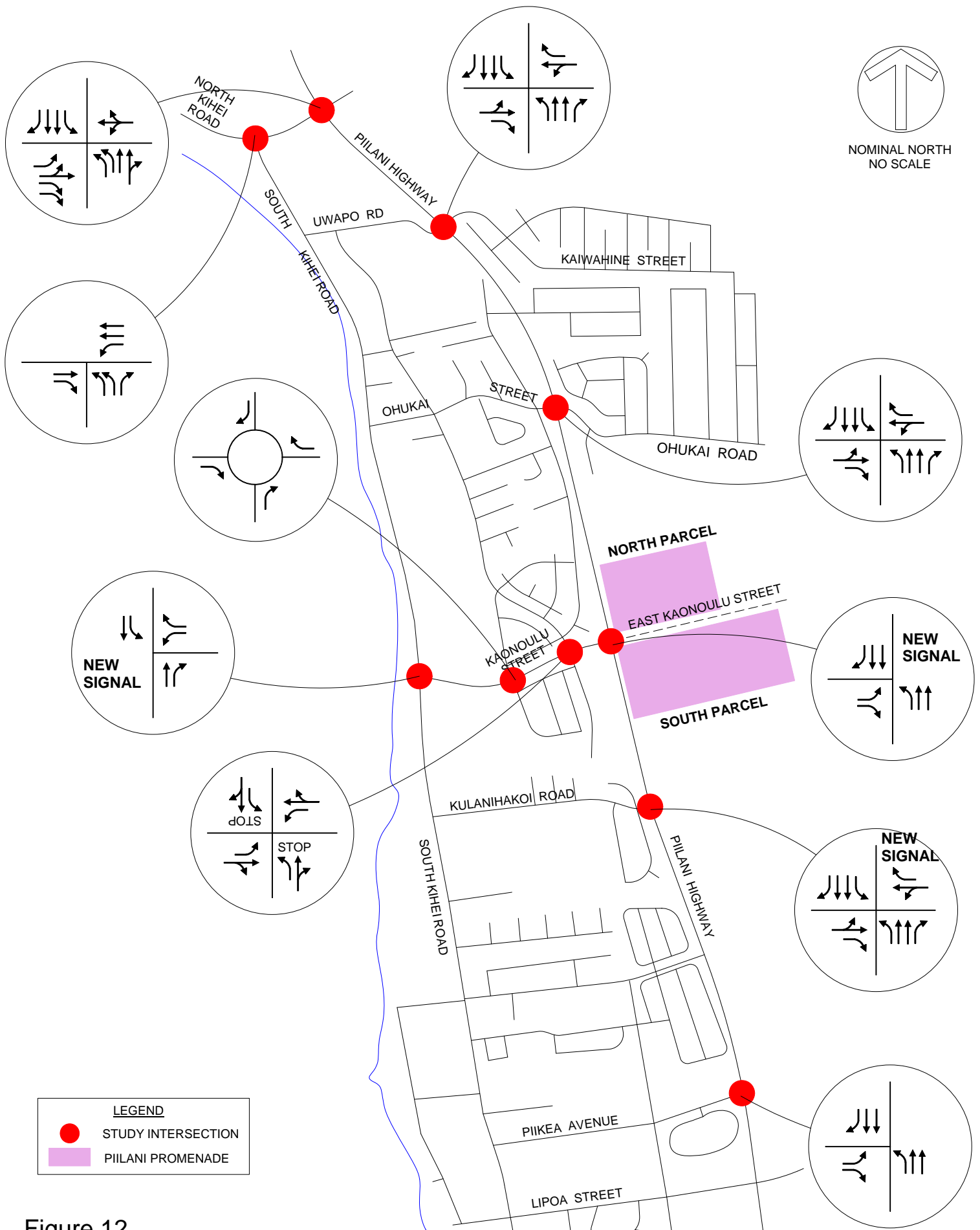


Figure 12
2018 BASELINE LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

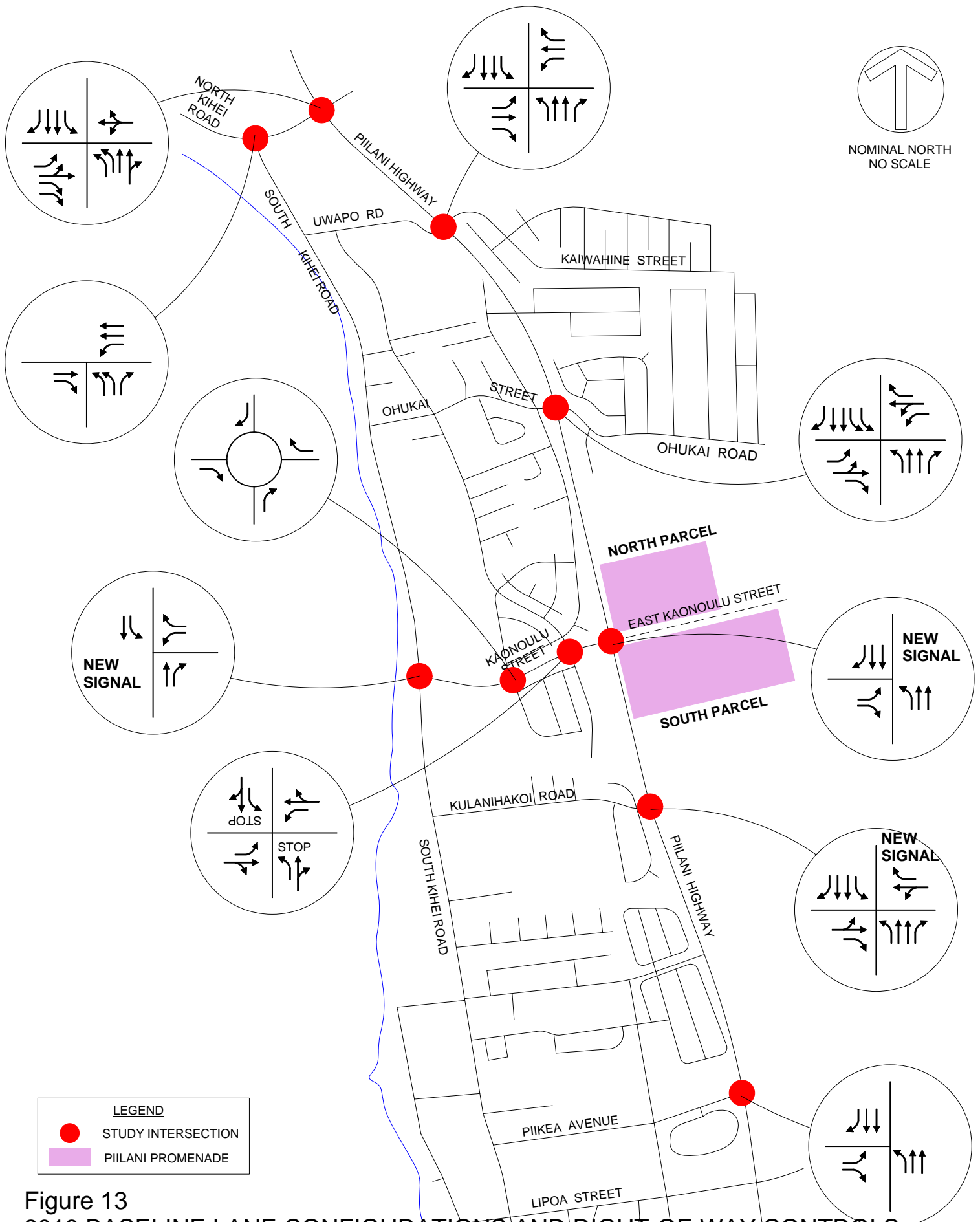


Figure 13
2018 BASELINE LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS WITH MITIGATION

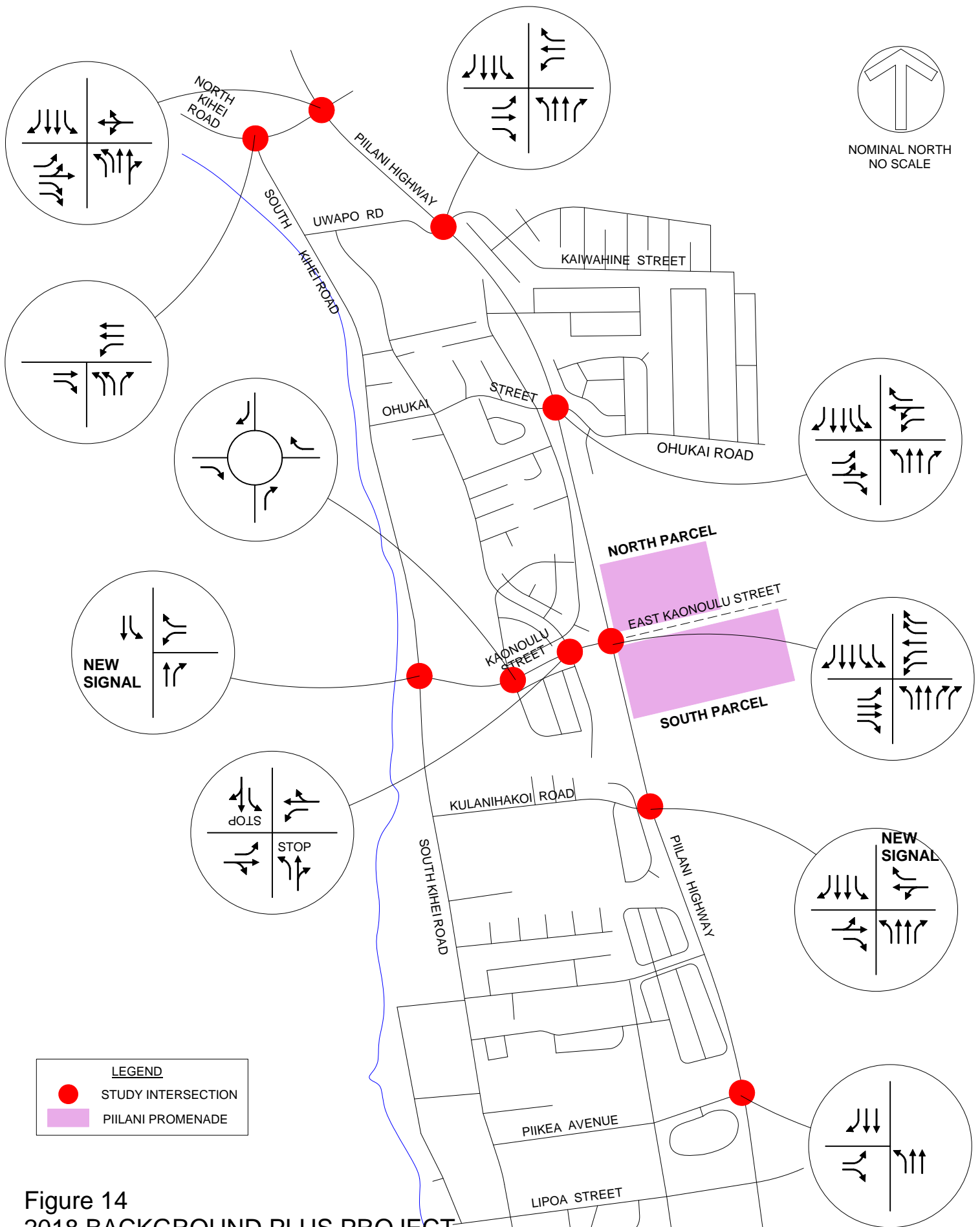


Figure 14
 2018 BACKGROUND PLUS PROJECT
 LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS

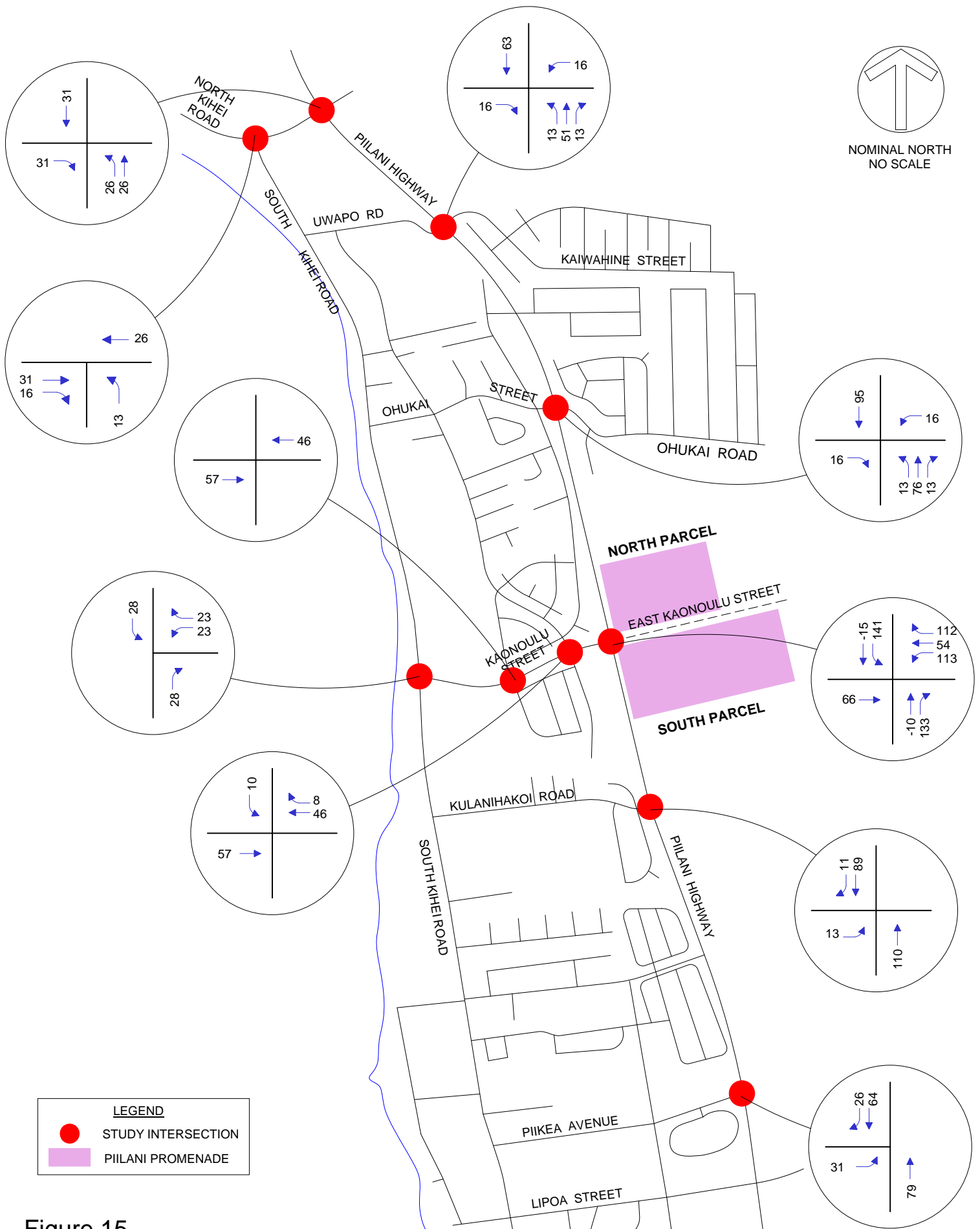
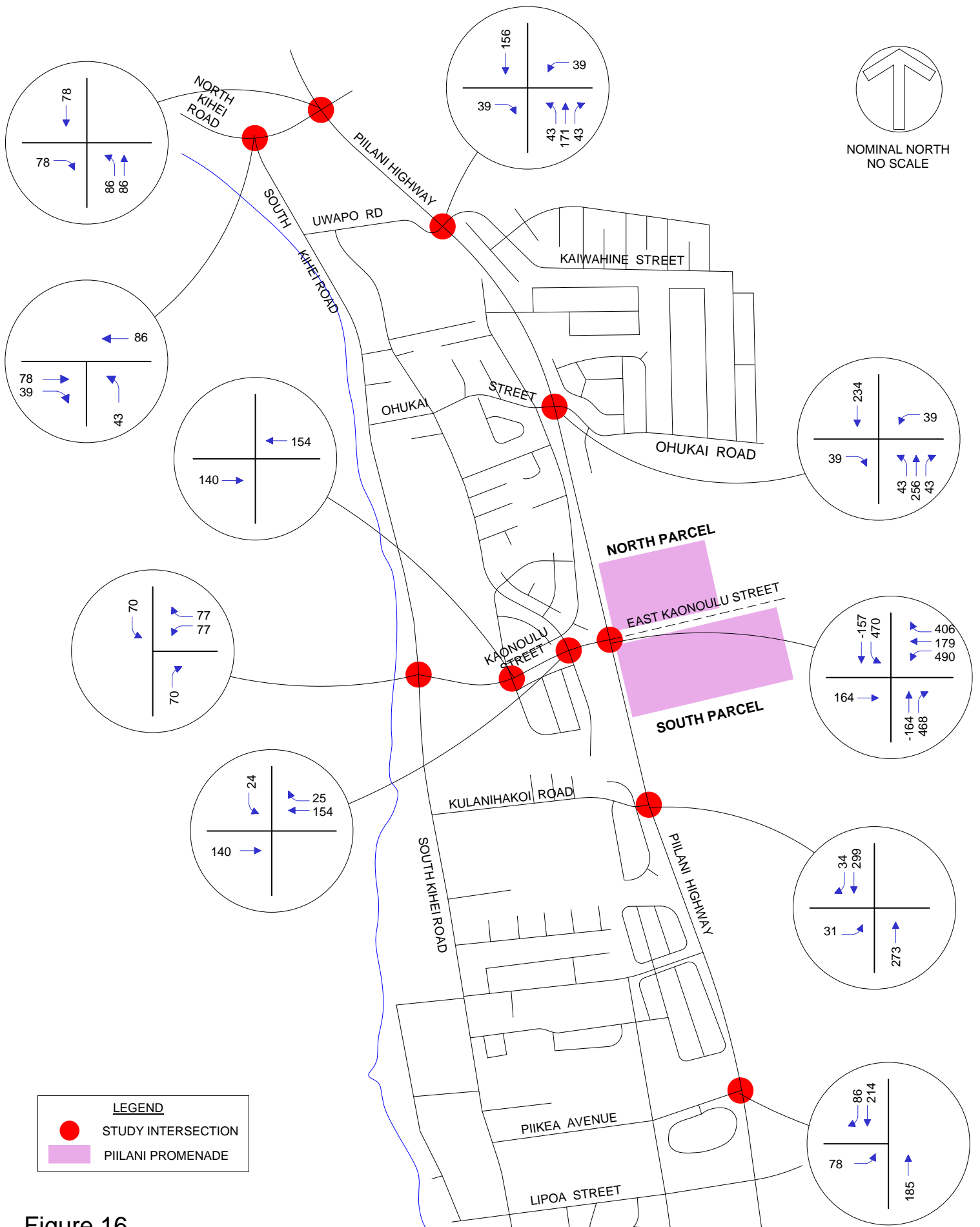


Figure 15
AM PEAK HOUR TRIP ASSIGNMENTS



**Figure 16
PM PEAK HOUR TRIP ASSIGNMENTS**

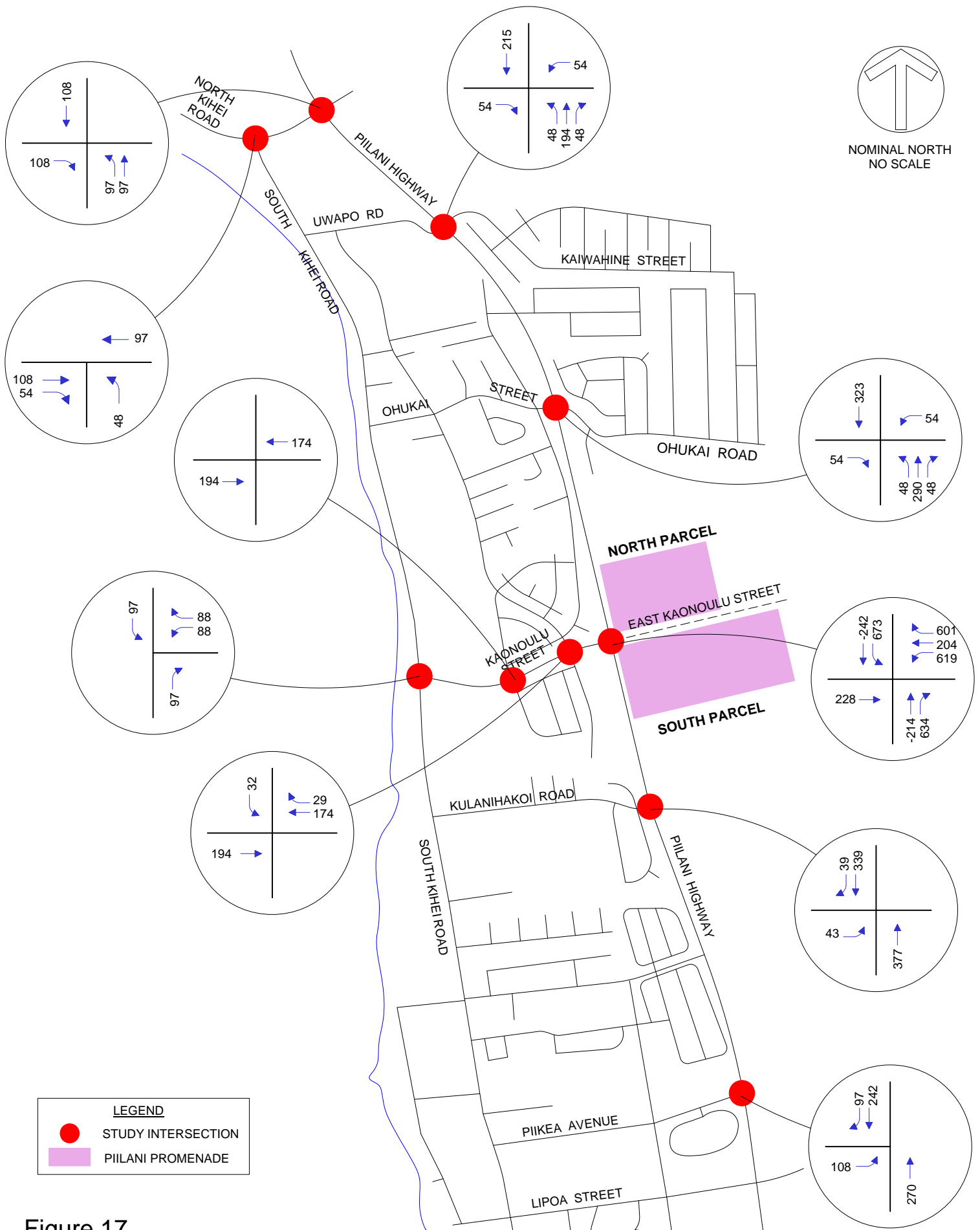


Figure 17
SATURDAY PEAK HOUR TRIP ASSIGNMENTS

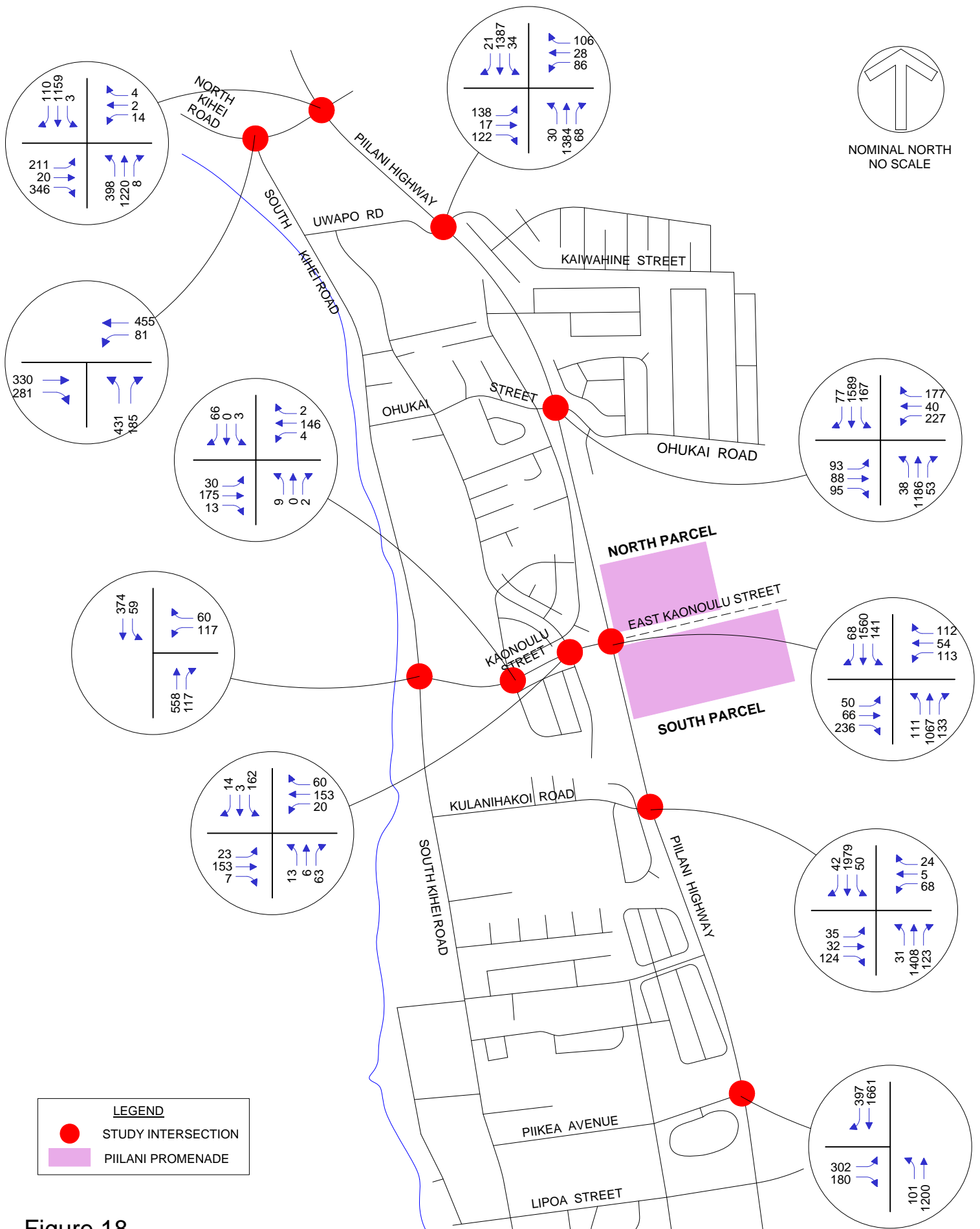


Figure 18
2018 BACKGROUND PLUS PROJECT WEEKDAY AM PEAK HOUR PROJECTIONS

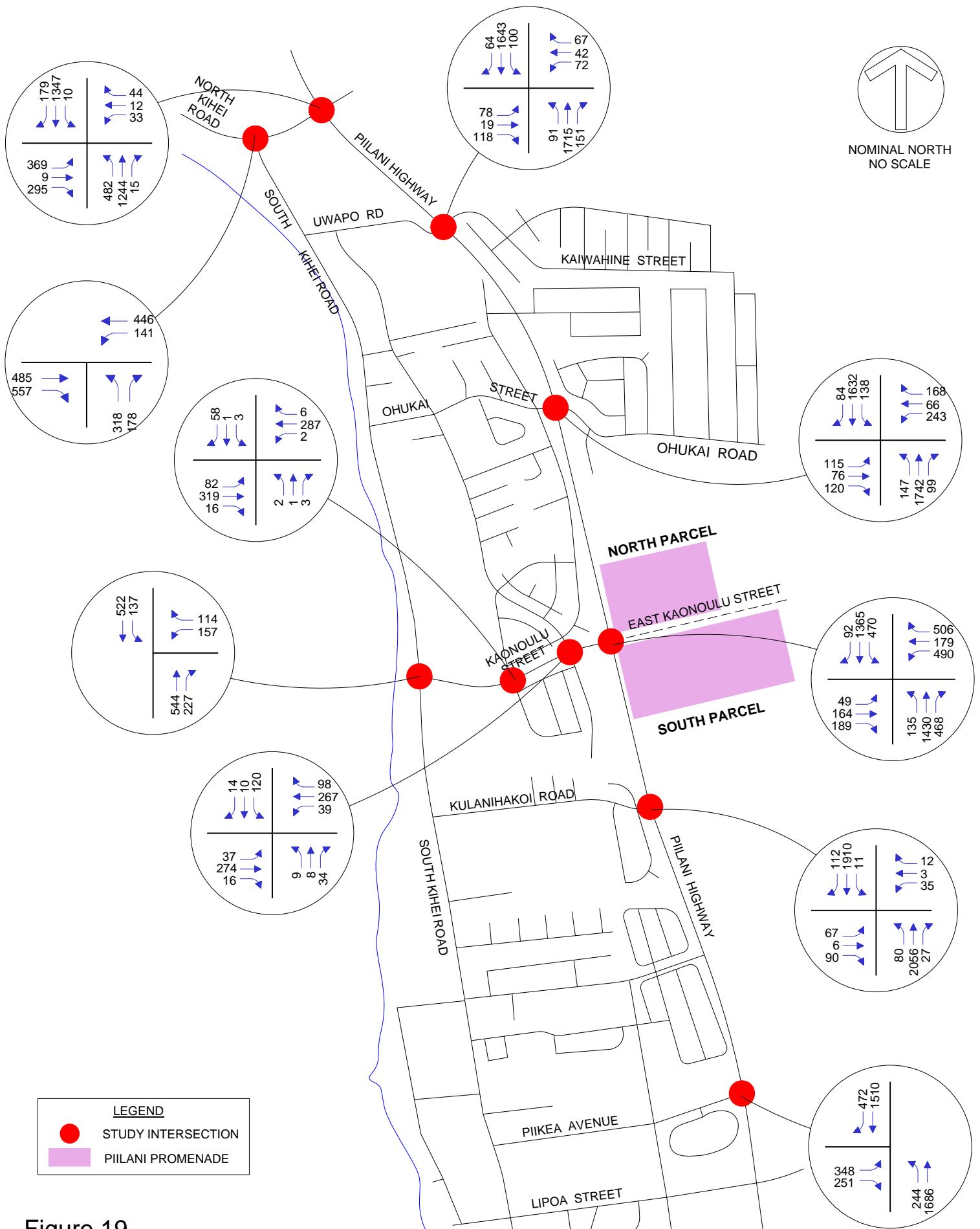


Figure 19
2018 BACKGROUND PLUS PROJECT WEEKDAY PM PEAK HOUR PROJECTIONS

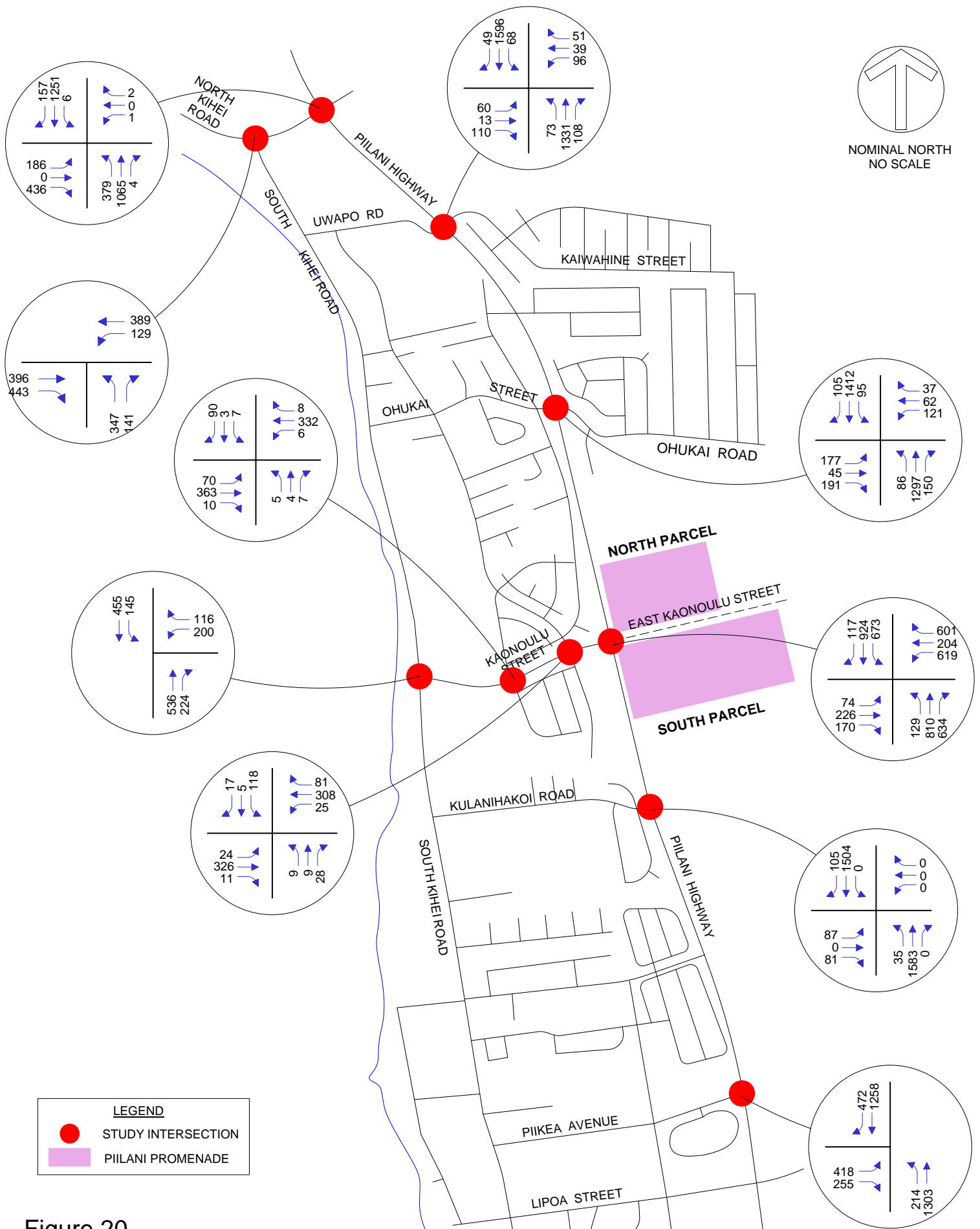
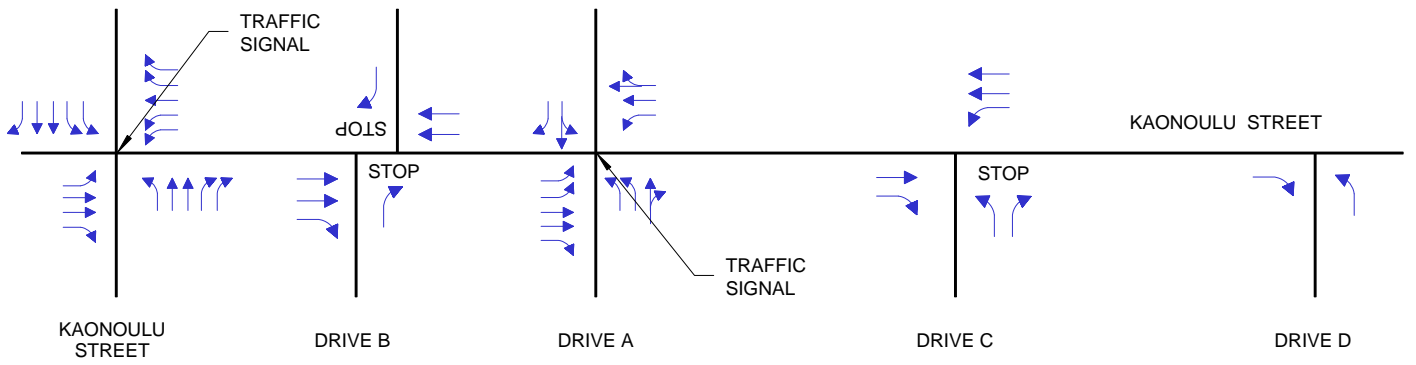
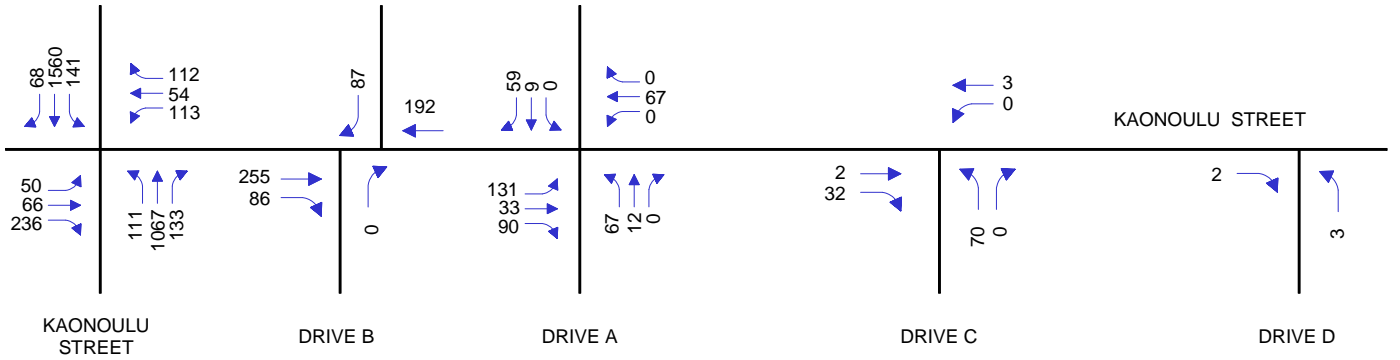


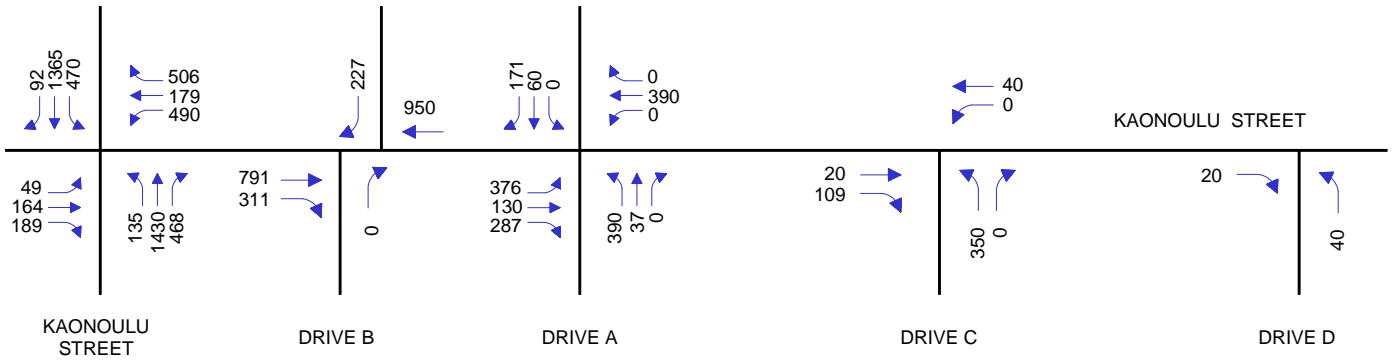
Figure 20
2018 BACKGROUND PLUS PROJECT SATURDAY PEAK HOUR PROJECTIONS



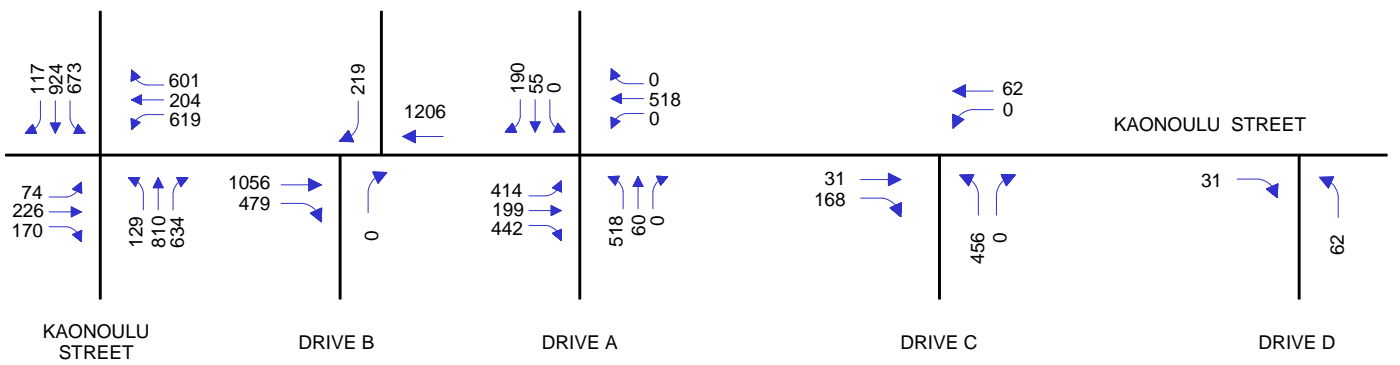
RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR



SATURDAY PEAK HOUR

Figure 21
2018 TRAFFIC PROJECTIONS AT PROJECT DRIVEWAYS

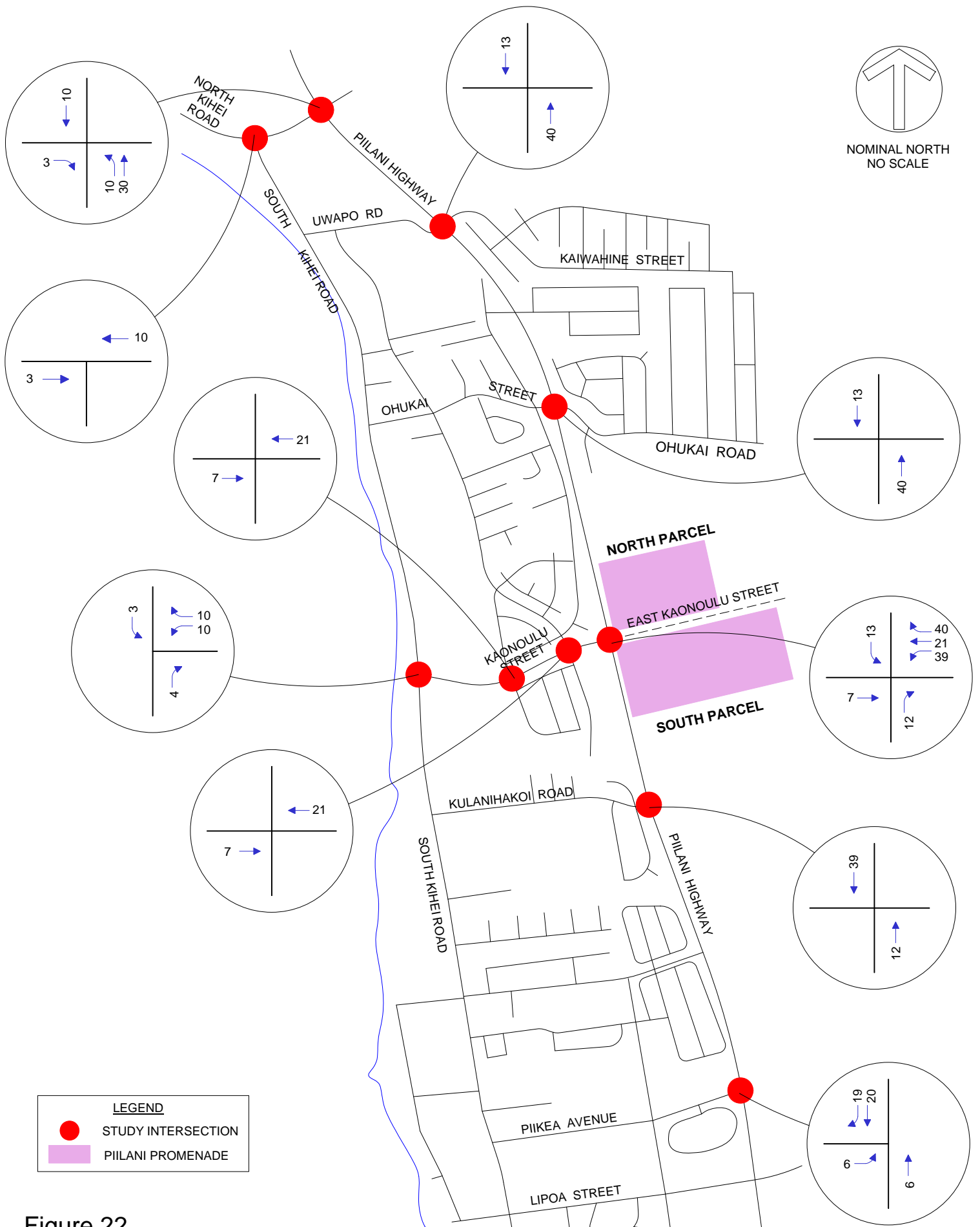


Figure 22
AM PROJECT TRIP ASSIGNMENTS FOR HONUA'ULA

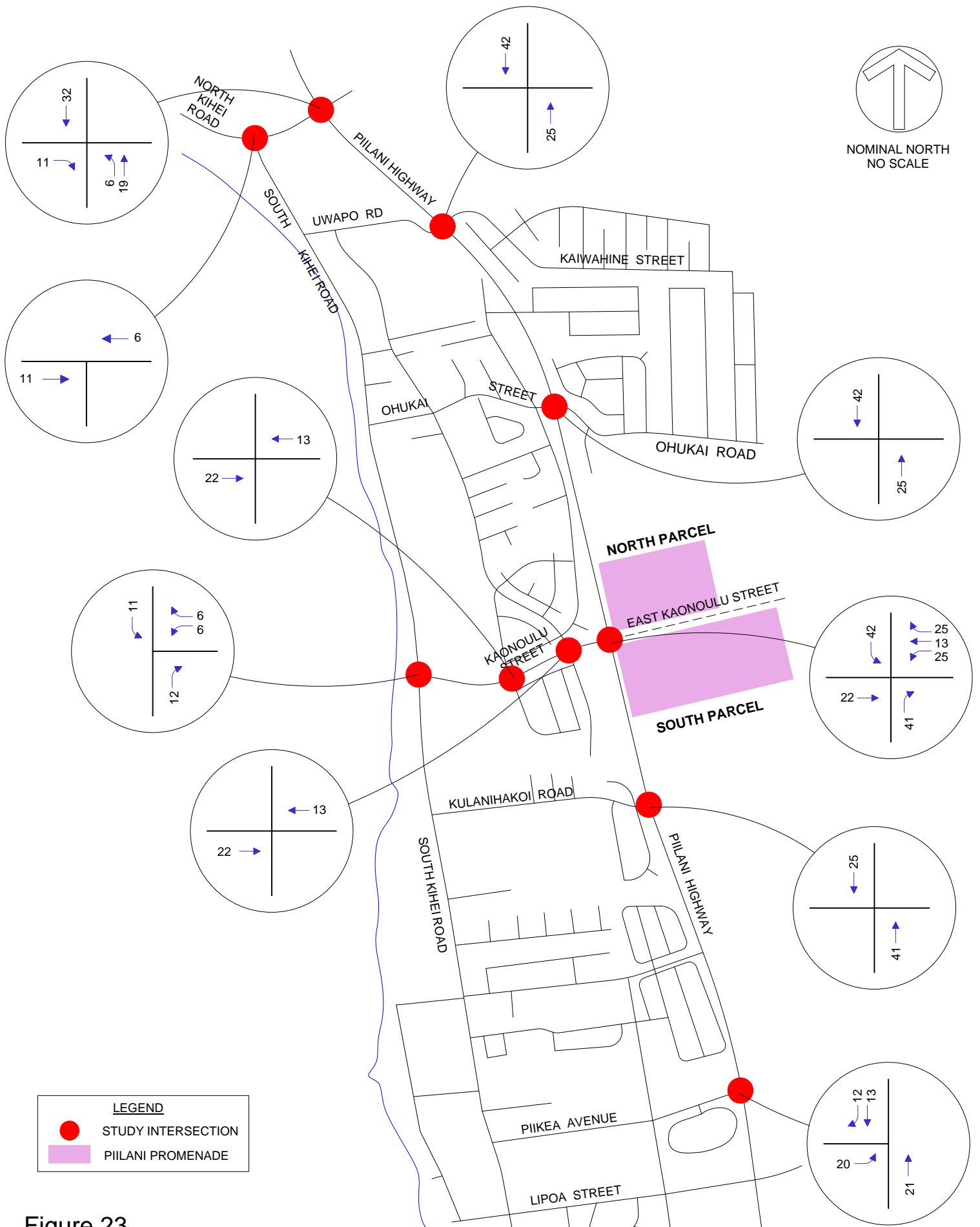


Figure 23
PM PROJECT TRIP ASSIGNMENTS FOR HONUUA'ULA

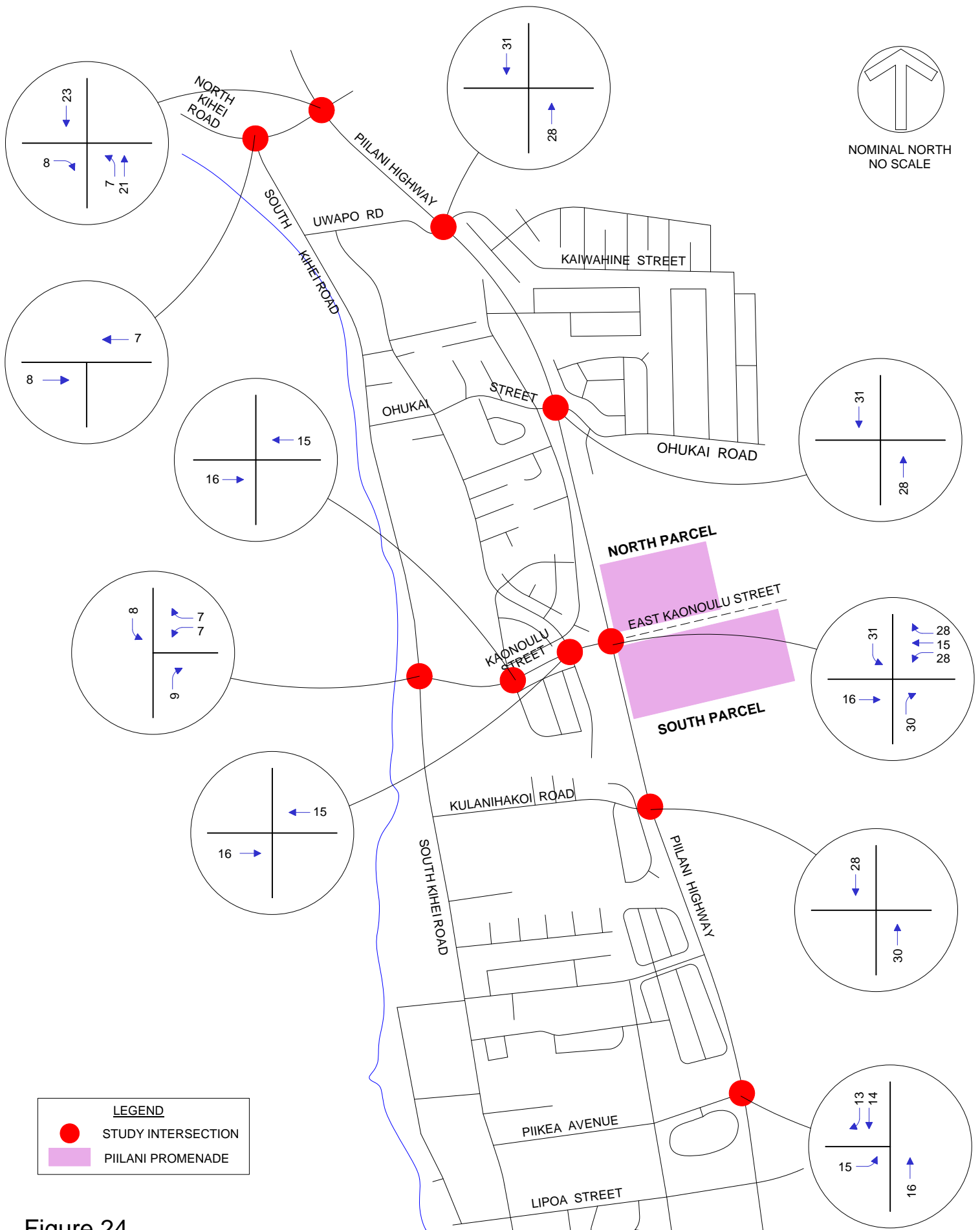
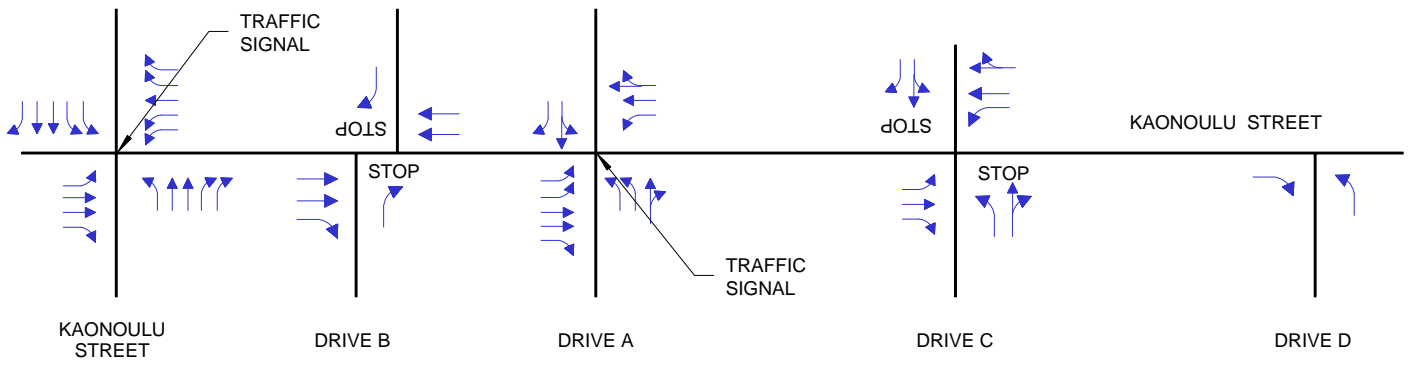
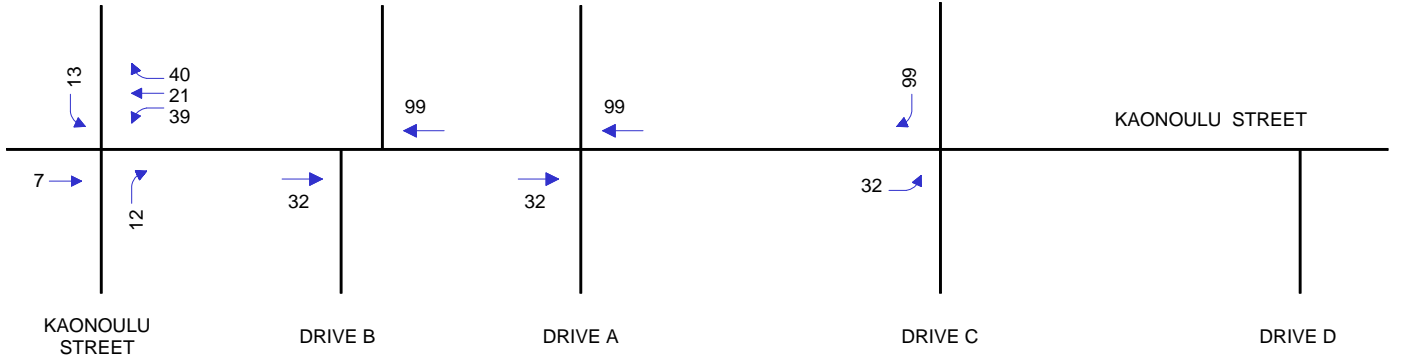


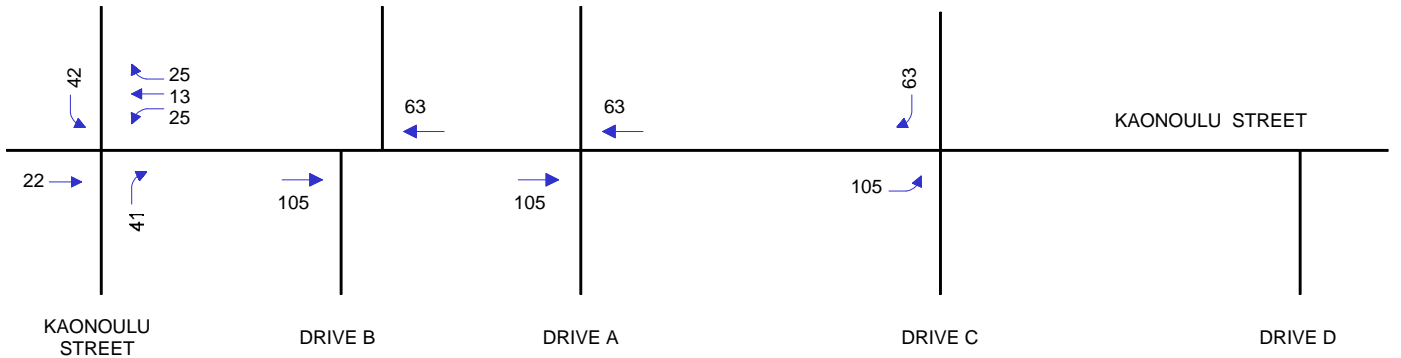
Figure 24
SATURDAY PROJECT TRIP ASSIGNMENTS FOR HONU'A'ULA



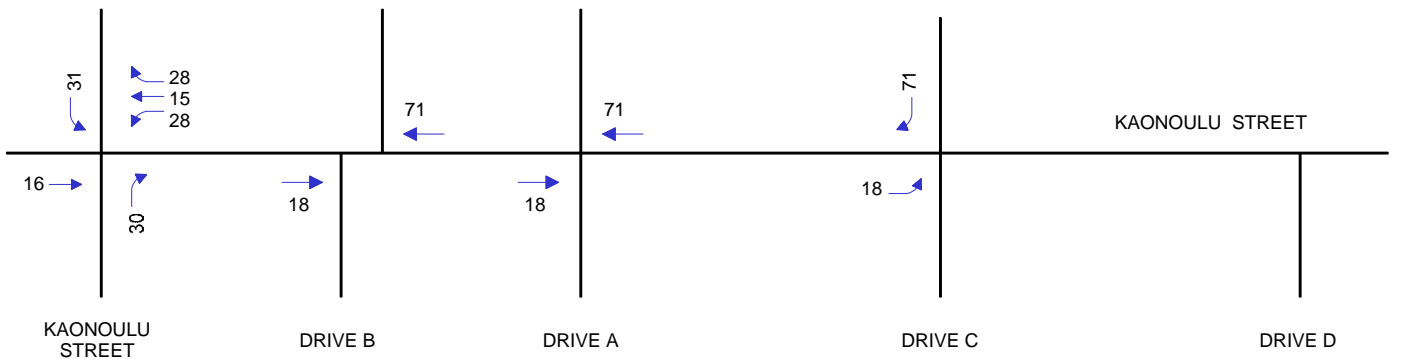
RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR



SATURDAY PEAK HOUR

Figure 25
PROJECT TRIP ASSIGNMENTS FOR HONU'A'ULA
ALONG EAST KAONOULU STREET

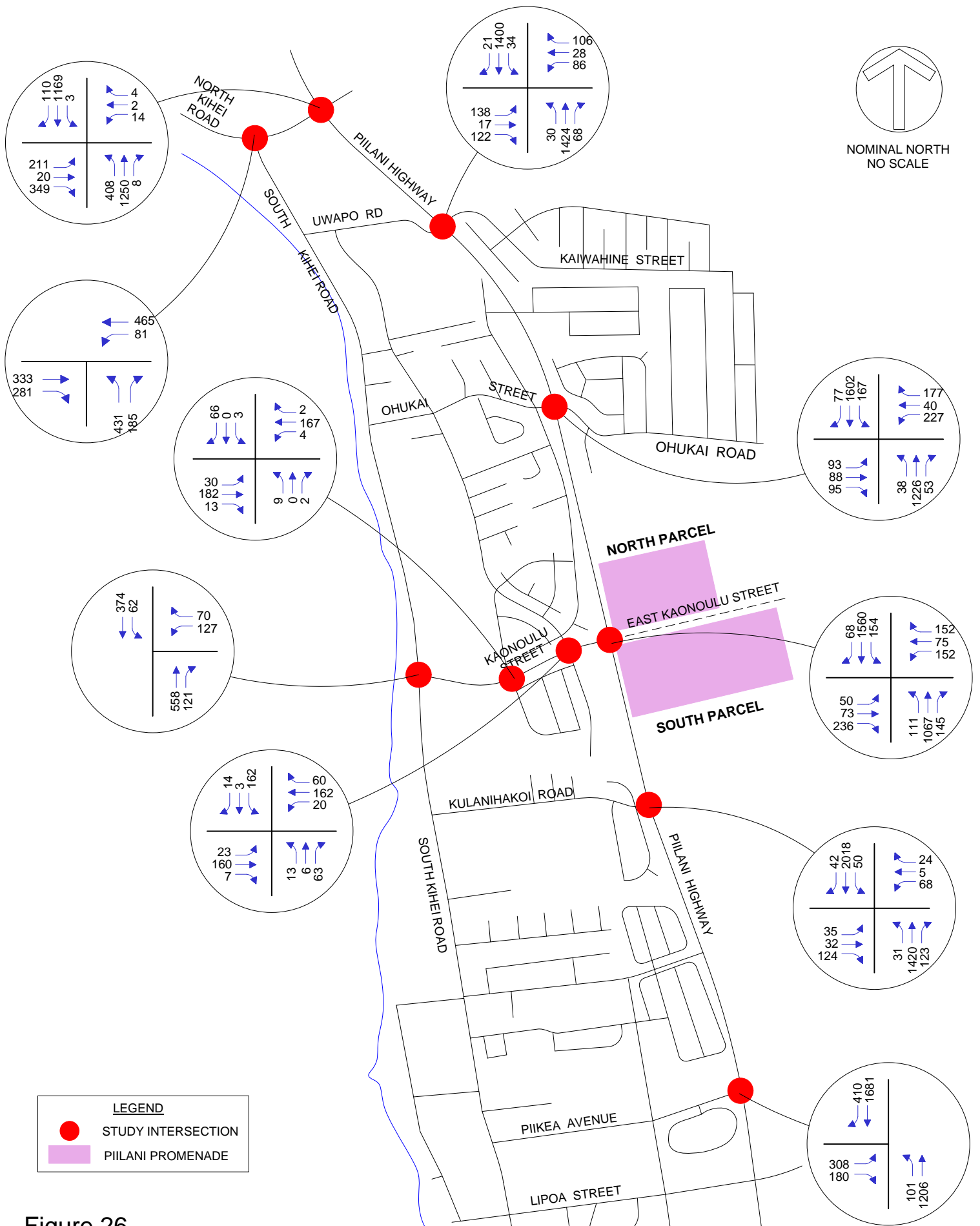


Figure 26
PIILANI PROMENADE PLUS HONUA'ULA AM PEAK HOUR TRAFFIC PROJECTIONS

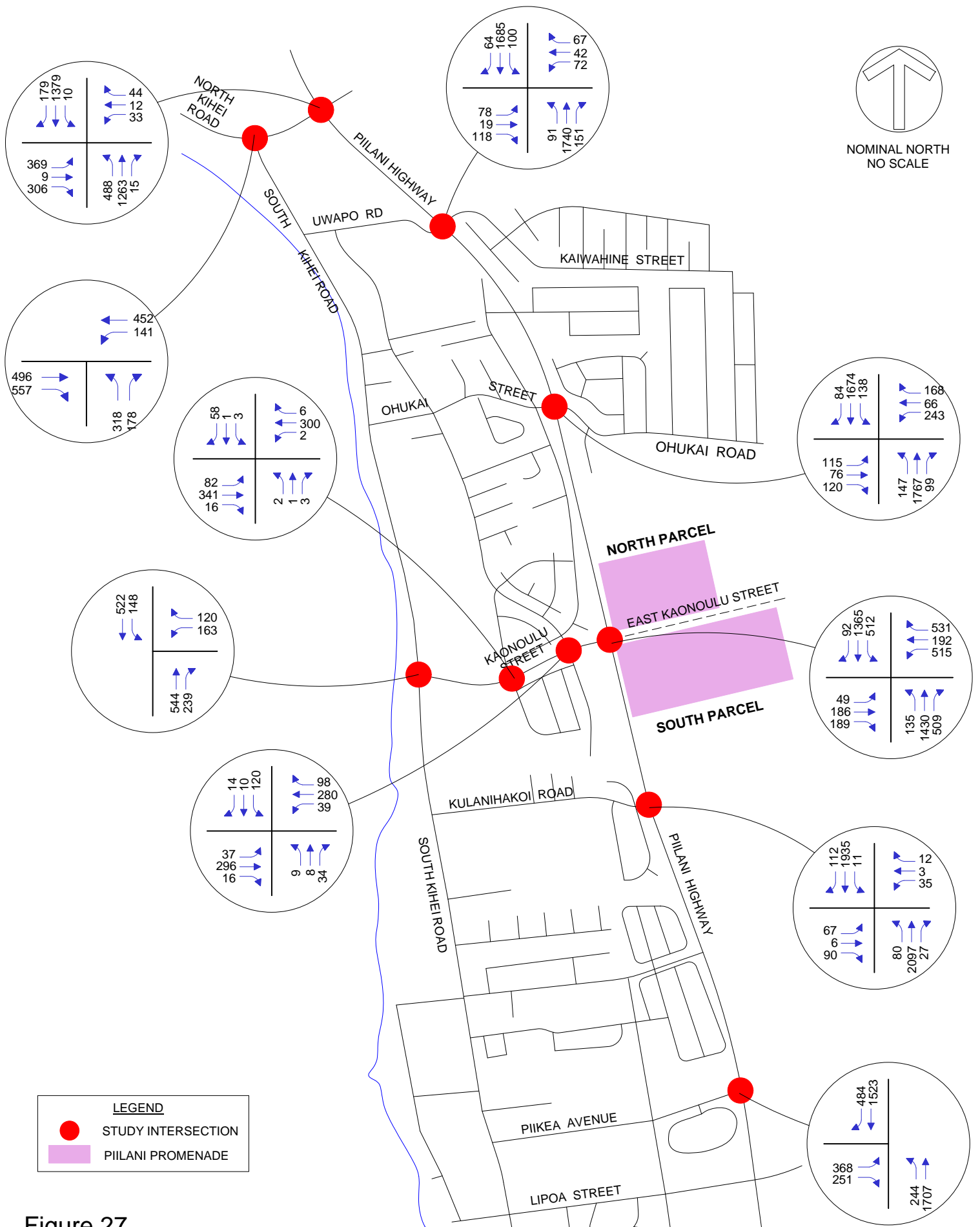


Figure 27
PIILANI PROMENADE PLUS HONUUA'ULA PM PEAK HOUR TRAFFIC PROJECTIONS

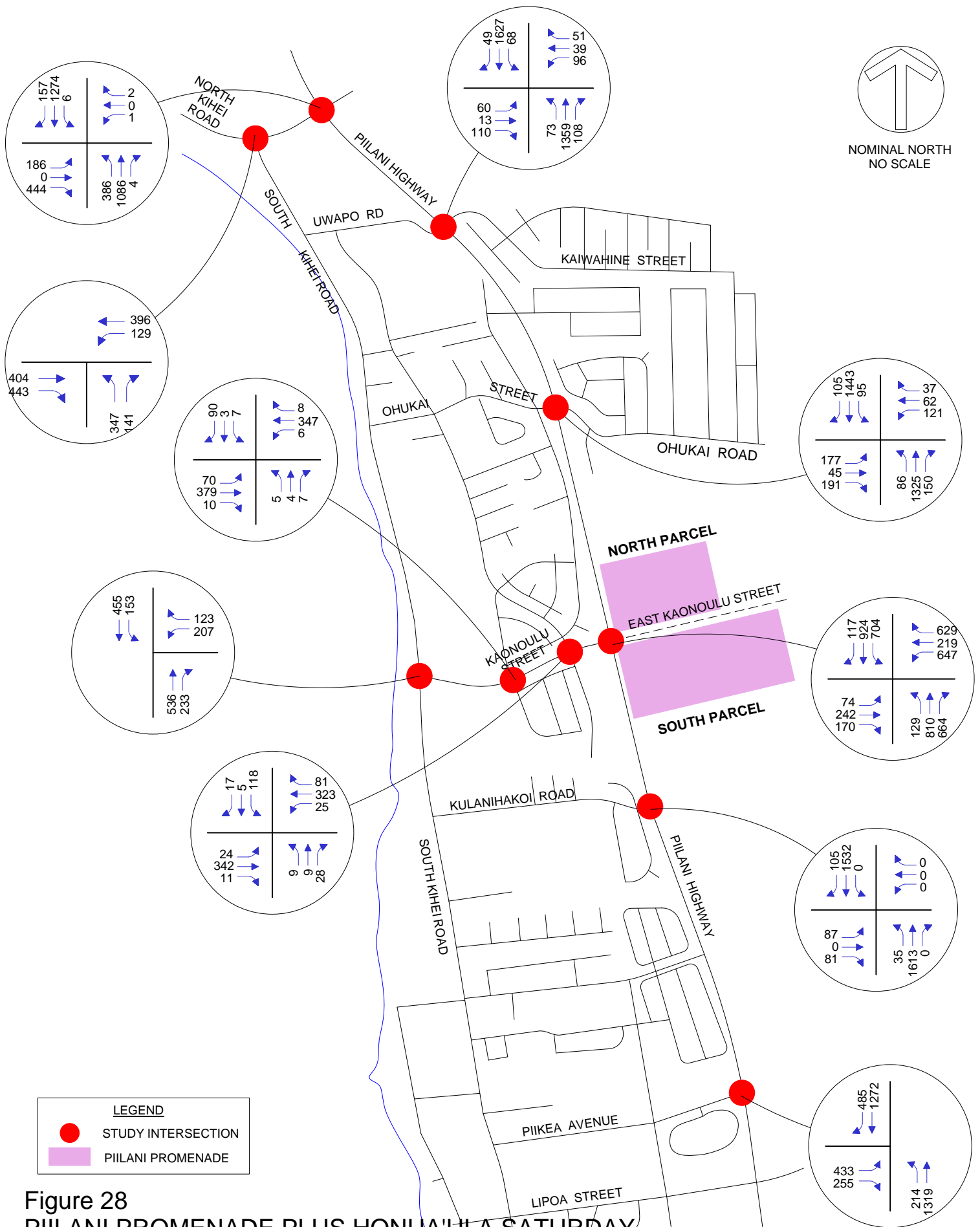
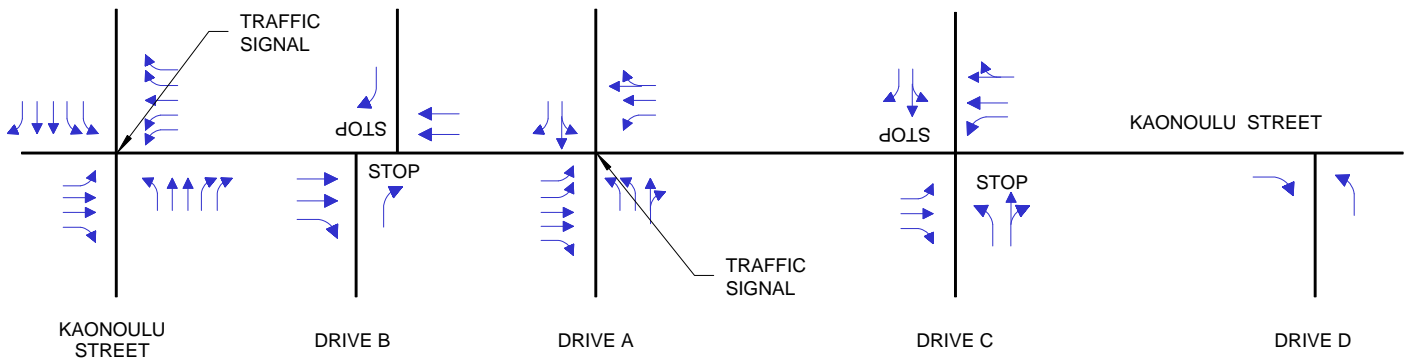
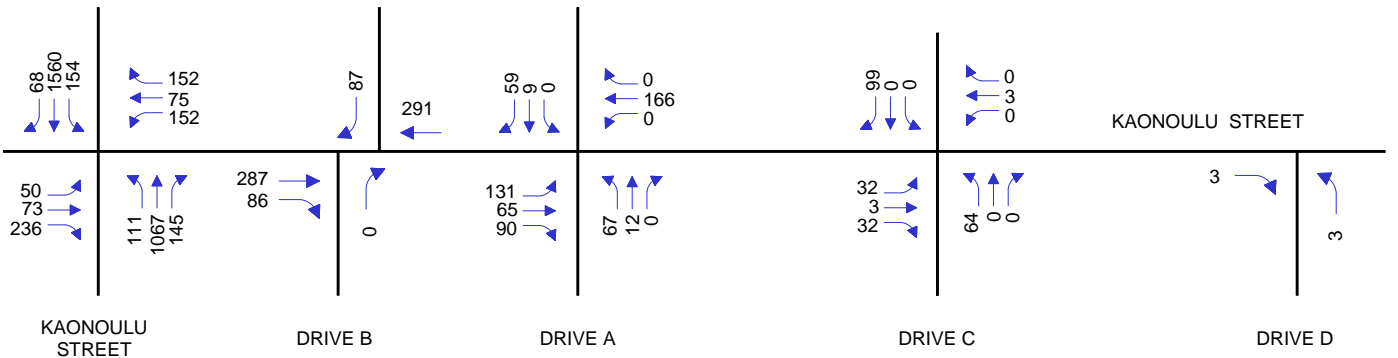


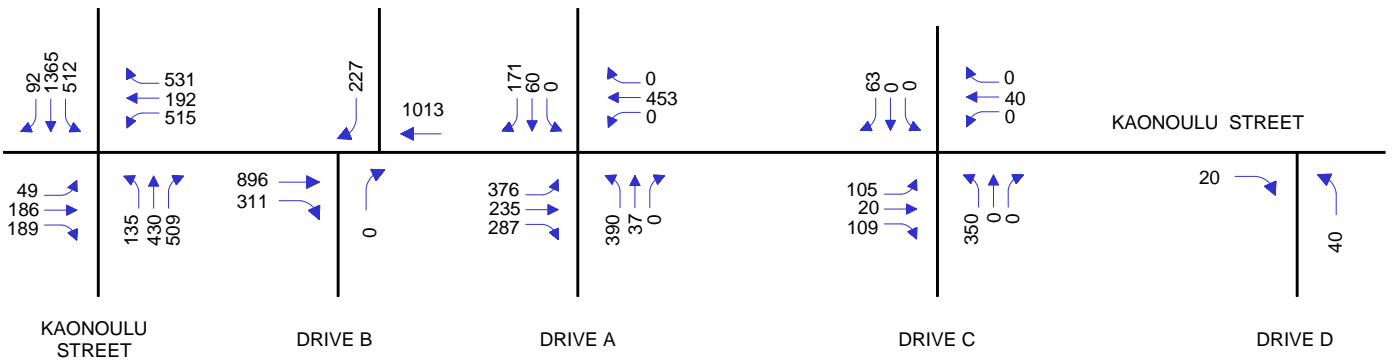
Figure 28
PIILANI PROMENADE PLUS HONUA'ULA SATURDAY
PEAK HOUR TRAFFIC PROJECTIONS



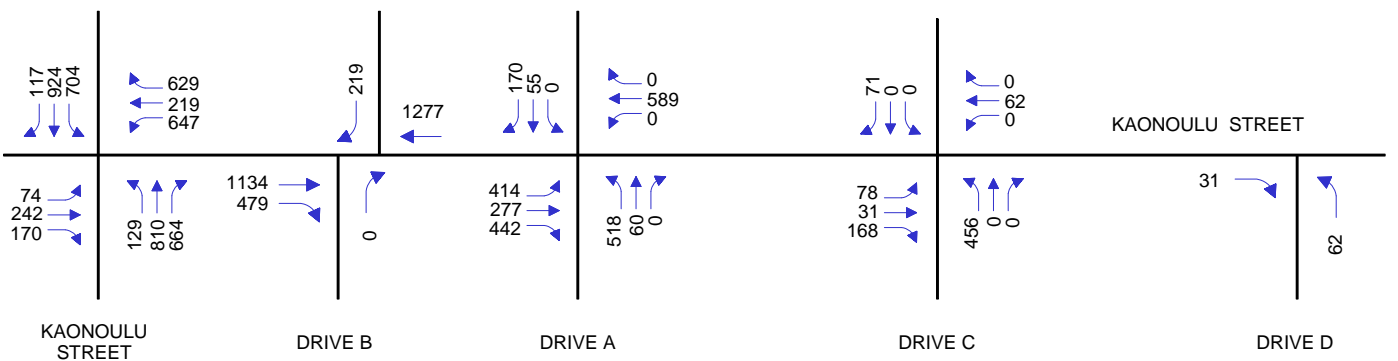
RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR



SATURDAY PEAK HOUR

Figure 29
 PIILANI PROMENADE PLUS HONUA'ULA PEAK HOUR TRAFFIC PROJECTIONS
 ALONG EAST KAONOULU STREET

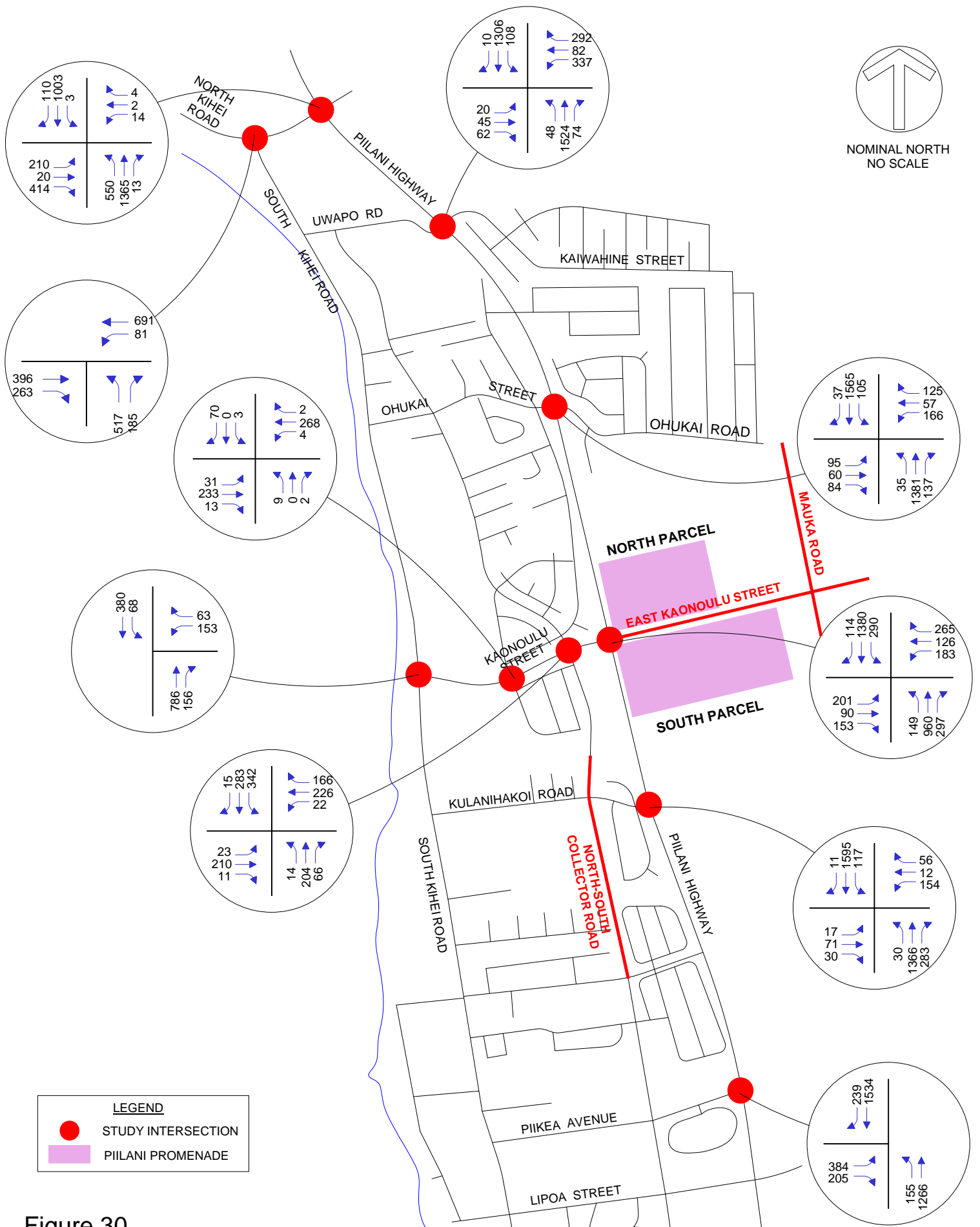


Figure 30
2025 BACKGROUND PLUS PROJECT WEEKDAY AM PEAK HOUR PROJECTIONS

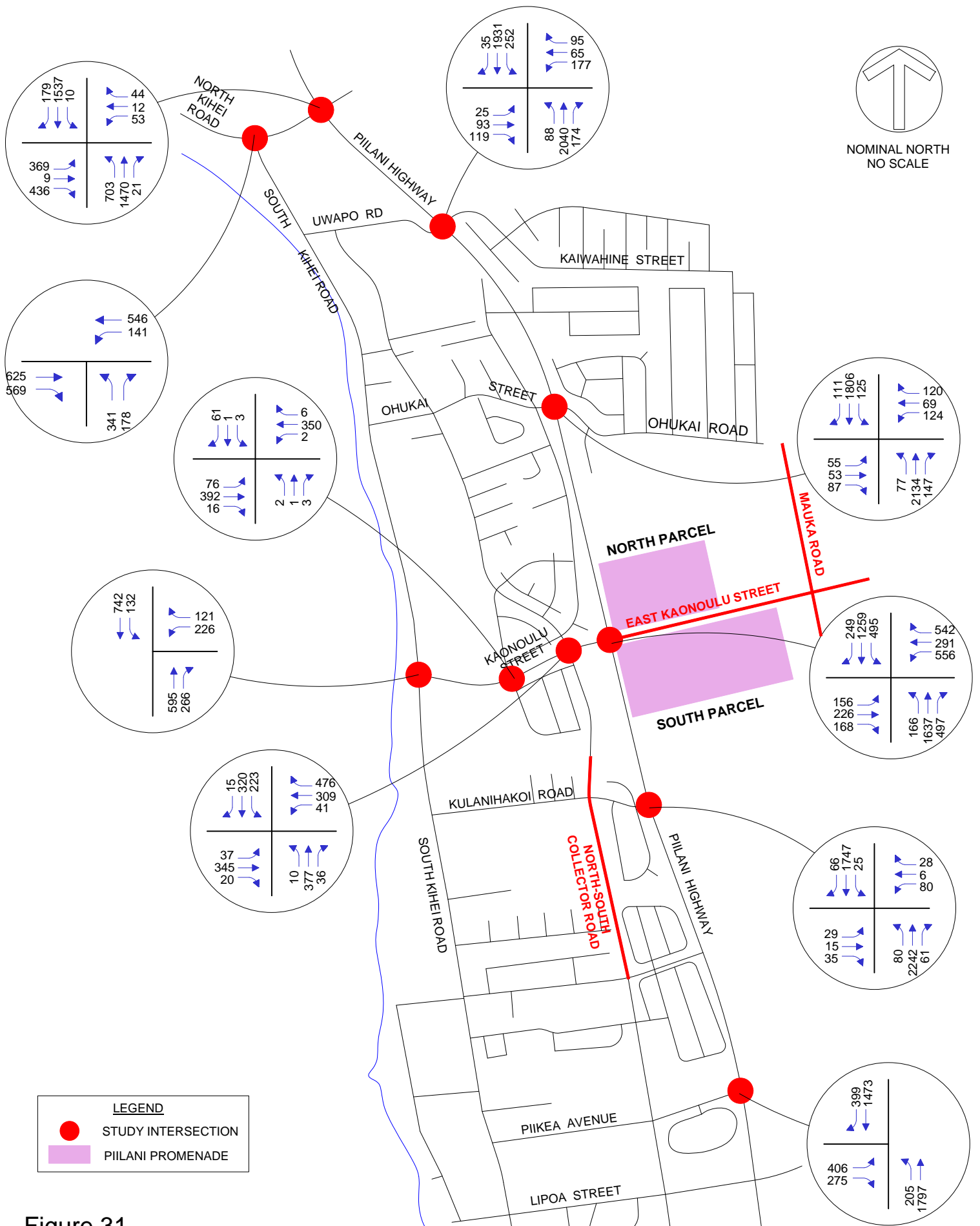
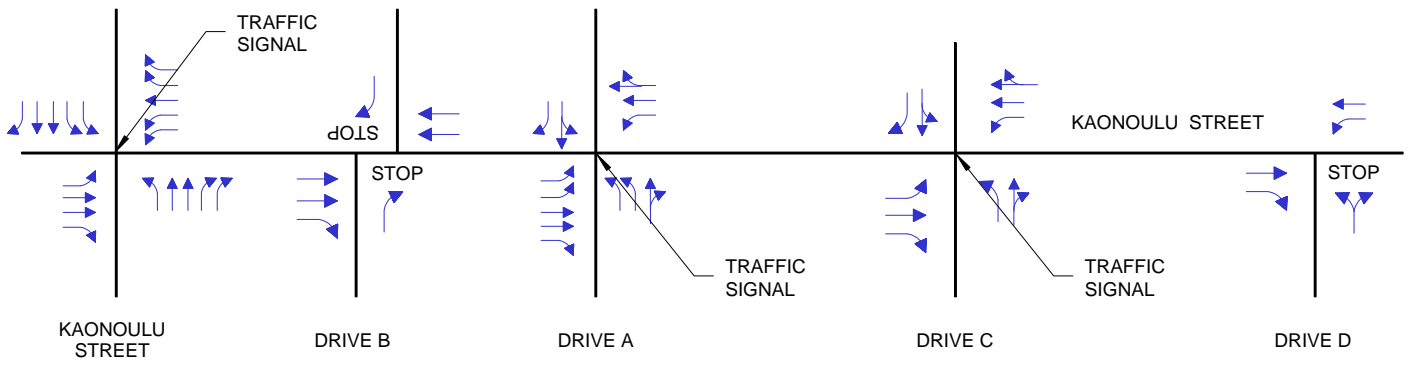
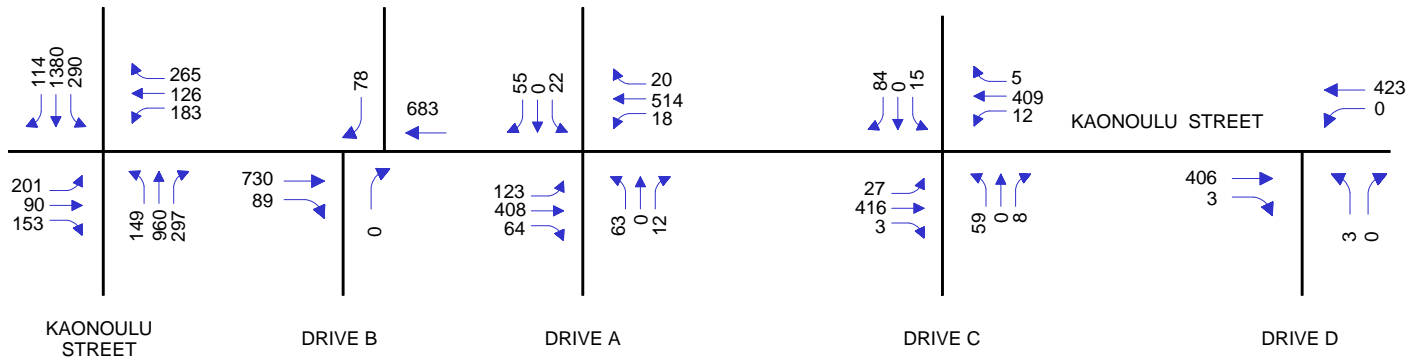


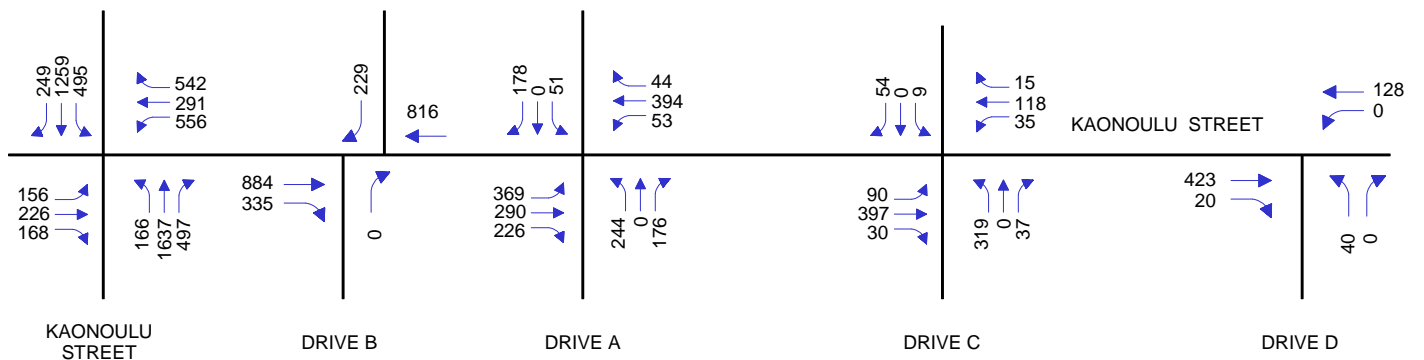
Figure 31
2025 BACKGROUND WEEKDAY PM PEAK HOUR PROJECTIONS



RECOMMENDED LANE CONFIGURATIONS



AM PEAK HOUR



PM PEAK HOUR

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

Figure 32
 2025 TRAFFIC PROJECTIONS AT PROJECT DRIVEWAYS

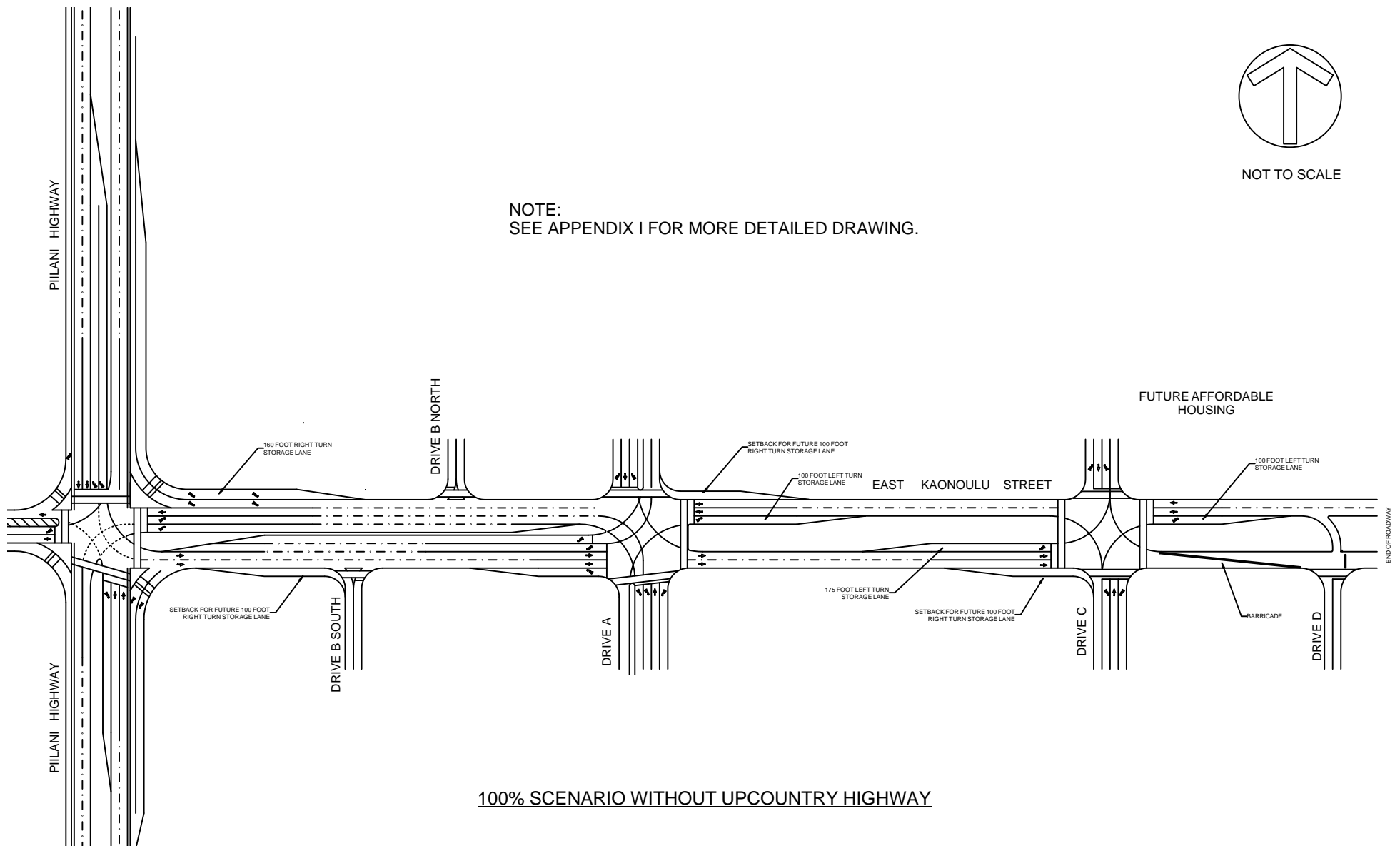


Figure 33
SCHEMATIC DRAWING OF EAST KAONOULU STREET

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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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	258	57	67	2	46	677
7	11:30 am	30	194	2				0	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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
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:

Interval	Start Time	North Approach			East Approach		South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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						1190			212		
Total Departures			1153						1701			87		
Total			2692						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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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						1628			146		
Total Departures			1556						1600			132		
Total			3070						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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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						1021			138		
Total Departures			984						1195			117		
Total			2121						2216			255		

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Piliāni 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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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						1328			173		
Total Departures			1346						1950			67		
Total			3208						3278			240		

TRAFFIC COUNT SUMMARY WORKSHEET

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

15-Minute Volumes Beginning at:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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						1766			131		
Total Departures			1727						1598			161		
Total			3316						3364			292		

TRAFFIC COUNT SUMMARY WORKSHEET

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

15-Minute Volumes Beginning at:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	Rt	Th	Lt	
		1	2	3	4	5	6	7	8	9	10	11	12	
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:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
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 (2013) Conditions

HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014

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												

HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014



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		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			

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



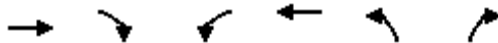
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖↗		↔		↖↗	↖↗		↖	↖↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	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			

HCM Signalized Intersection Capacity Analysis
4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



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			

HCM Signalized Intersection Capacity Analysis
8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



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			

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↕	↕↕	↕	↕	↕↕	↕
Volume (vph)	88	79	40	177	25	1011	40	167	1363	44
Lane Group Flow (vph)	227	127	315	203	36	1330	48	204	1747	64
Turn Type	Perm		Perm		Prot	Perm		Prot	Perm	
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	22.0	22.0
Minimum Split (s)	22.0	22.0	25.0	25.0	18.0	58.0	58.0	20.0	60.0	60.0
Total Split (s)	22.0	22.0	25.0	25.0	18.0	58.0	58.0	20.0	60.0	60.0
Total Split (%)	17.6%	17.6%	20.0%	20.0%	14.4%	46.4%	46.4%	16.0%	48.0%	48.0%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.88	0.38	1.05	0.47	0.23	0.86	0.07	0.91	0.94	0.08
Control Delay	82.2	11.5	114.7	9.8	58.8	32.4	5.6	101.0	33.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.2	11.5	114.7	9.8	58.8	32.4	5.6	101.0	33.8	1.5
Queue Length 50th (ft)	182	0	~277	0	28	394	1	148	~813	5
Queue Length 95th (ft)	188	9	#310	60	m46	370	m14	#272	451	3
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	263	337	301	435	198	1544	712	227	1850	847
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	0.86	0.38	1.05	0.47	0.18	0.86	0.07	0.90	0.94	0.08

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.

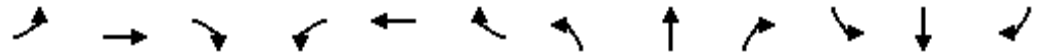
Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Volume (vph)	138	10	106	53	26	84	17	1227	46	29	1177	21
Lane Group Flow (vph)	0	191	177	0	112	100	20	1427	60	48	1353	24
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		0.86	0.39		0.58	0.26	0.13	0.63	0.06	0.31	0.55	0.02
Control Delay		74.8	8.3		56.4	9.3	29.5	31.9	12.3	47.9	22.9	6.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		74.8	8.3		56.4	9.3	29.5	31.9	12.3	47.9	22.9	6.7
Queue Length 50th (ft)		149	0		82	0	15	490	16	33	508	5
Queue Length 95th (ft)		129	0		113	39	m16	557	m23	44	645	m12
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		234	469		203	408	156	2275	1039	156	2444	1101
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		0.82	0.38		0.55	0.25	0.13	0.63	0.06	0.31	0.55	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



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	191	20	298	2	341	1097	3	993	110
Lane Group Flow (vph)	167	175	347	28	517	1307	8	1103	116
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	0.71	0.72	0.29	0.24	0.71	0.51	0.14	0.63	0.14
Control Delay	74.1	74.8	11.9	54.9	39.8	16.9	64.3	27.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	74.8	11.9	54.9	39.8	16.9	64.3	27.8	6.3
Queue Length 50th (ft)	144	151	34	19	226	414	6	358	6
Queue Length 95th (ft)	178	61	73	27	177	503	11	508	46
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	256	262	1341	117	948	2562	57	1752	835
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	0.65	0.67	0.26	0.24	0.55	0.51	0.14	0.63	0.14

Intersection Summary

Cycle Length: 125

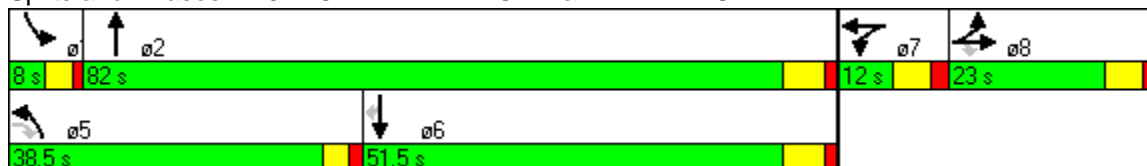
Actuated Cycle Length: 125

Offset: 40 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑↑	↑↑	↑
Volume (vph)	282	182	81	398	390	165
Lane Group Flow (vph)	332	217	88	468	429	209
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	0.27	0.20	0.59	0.17	0.75	0.13
Control Delay	11.1	1.9	55.2	1.4	50.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	1.9	55.2	1.4	50.5	0.2
Queue Length 50th (ft)	104	0	75	10	173	0
Queue Length 95th (ft)	179	26	131	24	217	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1216	1109	290	2722	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	0.27	0.20	0.30	0.17	0.43	0.13

Intersection Summary

Cycle Length: 125

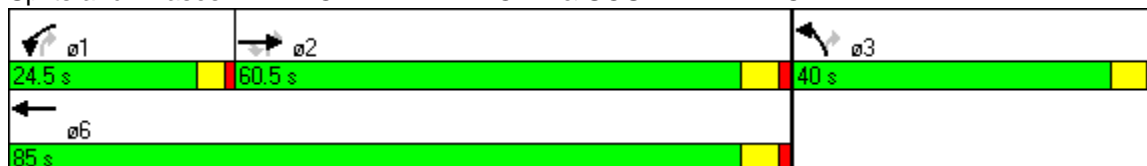
Actuated Cycle Length: 125

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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Volume (vph)	259	180	101	1008	1479	358
Lane Group Flow (vph)	282	196	110	1096	1608	389
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phases	4	4	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)	29.0	29.0	96.0	96.0	96.0	96.0
Total Split (%)	23.2%	23.2%	76.8%	76.8%	76.8%	76.8%
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	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.87	0.58	0.70	0.41	0.60	0.30
Control Delay	66.4	37.6	36.1	6.3	12.7	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	37.6	36.1	6.3	12.7	3.5
Queue Length 50th (ft)	219	99	43	156	443	55
Queue Length 95th (ft)	#353	180	#178	190	m465	m75
Internal Link Dist (ft)	682			1061	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	354	364	158	2666	2666	1288
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	0.80	0.54	0.70	0.41	0.60	0.30

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 16 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 80

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

 96 s	 29 s
 96 s	

HCM Unsignalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

6/18/2014



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	

HCM Unsignalized Intersection Capacity Analysis
6: KAONOULU STREET & SOUTH KIHEI ROAD

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
7: KULANIHAKOI STREET & PIILANI HIGHWAY

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

6/18/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↘		↗	↘		↗	↘	
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		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

6/18/2014

























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
Analysis Period (min)		15
		A

HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014

													
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	69.6	69.6	16.5	71.1	71.1	
Effective Green, g (s)		16.0	16.0		29.9	29.9	16.0	70.6	70.6	17.5	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	1666	745	207	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	35.6	21.9	63.8	34.2	21.0	
Progression Factor		1.00	1.00		1.00	1.00	0.93	1.17	1.38	1.32	0.60	0.12	
Incremental Delay, d2		55.2	0.2		25.7	0.2	7.6	5.8	0.2	8.5	5.0	0.2	
Delay (s)		122.0	60.4		84.4	49.4	67.9	47.4	30.3	92.9	25.5	2.7	
Level of Service		F	E		F	D	E	D	C	F	C	A	
Approach Delay (s)		102.3			71.5			48.1			30.2		
Approach LOS		F			E			D			C		
Intersection Summary													
HCM Average Control Delay			47.4									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												

HCM Signalized Intersection Capacity Analysis

2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014



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		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	104.9	104.9	12.3	108.7	108.7
Effective Green, g (s)		18.8	18.8		18.8	18.8	9.5	105.9	105.9	13.3	109.7	109.7
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.06	0.71	0.71	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	2499	1118	157	2588	1158
v/s Ratio Prot							0.03	c0.43		c0.05	c0.40	
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	0.61	0.54	0.05
Uniform Delay, d1		63.9	57.8		61.3	57.7	68.0	11.4	6.8	65.9	9.0	5.6
Progression Factor		1.00	1.00		1.00	1.00	0.82	2.89	5.25	0.86	2.70	4.72
Incremental Delay, d2		30.0	0.1		2.2	0.1	1.9	0.6	0.1	4.4	0.5	0.1
Delay (s)		93.9	58.0		63.5	57.8	57.4	33.7	35.9	61.2	24.7	26.6
Level of Service		F	E		E	E	E	C	D	E	C	C
Approach Delay (s)		77.0			61.2			34.6			27.0	
Approach LOS		E			E			C			C	

Intersection Summary

HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



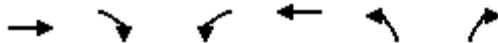
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘		↙		↖	↗		↘	↙	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.88		1.00		0.97	0.95		1.00	0.95	1.00
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	207	0	29	0	0	1	0	0	0	73
Lane Group Flow (vph)	230	242	41	0	208	0	418	1217	0	20	1293	124
Turn Type	Split		Prot	Split			Prot			Prot		Perm
Protected Phases	8	8	8	7	7		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	22.9	22.9	22.9		19.9		20.1	82.2		3.0	64.6	64.6
Effective Green, g (s)	24.9	24.9	24.9		21.9		20.6	84.2		3.0	66.6	66.6
Actuated g/C Ratio	0.17	0.17	0.17		0.15		0.14	0.56		0.02	0.44	0.44
Clearance Time (s)	6.0	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		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	279	280	463		248		471	1979		35	1571	703
v/s Ratio Prot	0.14	c0.14	0.09		c0.14		c0.12	0.35		0.01	c0.37	
v/s Ratio Perm												0.12
v/c Ratio	0.82	0.86	0.09		0.84		0.89	0.61		0.57	0.82	0.18
Uniform Delay, d1	60.4	60.9	52.9		62.3		63.6	22.0		72.9	36.5	25.1
Progression Factor	0.80	0.81	2.54		1.00		0.99	0.64		1.00	1.00	1.00
Incremental Delay, d2	16.8	22.1	0.1		21.2		14.8	1.2		13.2	5.0	0.5
Delay (s)	65.4	71.2	134.3		83.6		77.4	15.3		86.1	41.6	25.7
Level of Service	E	E	F		F		E	B		F	D	C
Approach Delay (s)		91.1			83.6		31.1				40.1	
Approach LOS		F			F		C				D	

Intersection Summary

HCM Average Control Delay	48.0	HCM Level of Service	D
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			

HCM Signalized Intersection Capacity Analysis
4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



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	229	0	0	0	0
Lane Group Flow (vph)	482	249	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)	76.4	76.4	19.1	99.5	39.5	150.0
Effective Green, g (s)	77.9	77.9	19.1	101.0	41.0	150.0
Actuated g/C Ratio	0.52	0.52	0.13	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)	968	822	225	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	0.50	0.30	0.75	0.16	0.32	0.12
Uniform Delay, d1	23.4	20.6	63.1	9.0	43.3	0.0
Progression Factor	1.00	1.00	1.55	0.34	1.00	1.00
Incremental Delay, d2	1.8	0.9	8.6	0.1	0.9	0.0
Delay (s)	25.2	21.5	106.2	3.1	44.2	0.0
Level of Service	C	C	F	A	D	A
Approach Delay (s)	23.4			34.6	27.0	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	27.3	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			

HCM Signalized Intersection Capacity Analysis
8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



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

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↕	↕↕	↕	↕	↕↕	↕
Volume (vph)	76	81	66	168	104	1379	56	138	1272	56
Lane Group Flow (vph)	188	88	325	189	132	1452	88	148	1445	88
Turn Type	Perm		Perm		Prot	Perm		Prot	Perm	
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	20.0	20.0	35.0	35.0	30.0	65.0	65.0	30.0	65.0	65.0
Total Split (%)	13.3%	13.3%	23.3%	23.3%	20.0%	43.3%	43.3%	20.0%	43.3%	43.3%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.97	0.36	0.91	0.41	0.70	0.87	0.11	0.71	0.85	0.11
Control Delay	122.5	15.7	82.0	8.8	63.3	48.3	16.3	88.2	26.6	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.5	15.7	82.0	8.8	63.3	48.3	16.3	88.2	26.6	1.6
Queue Length 50th (ft)	186	0	311	0	129	713	27	126	768	9
Queue Length 95th (ft)	#305	55	345	64	m164	m#886	m38	228	#513	1
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	194	247	372	477	307	1666	772	307	1703	788
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	0.97	0.36	0.87	0.40	0.43	0.87	0.11	0.48	0.85	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

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.

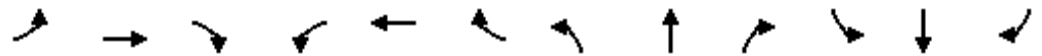
Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY

ø1	ø2	ø7	ø8
30 s	65 s	35 s	20 s
ø5	ø6		
30 s	65 s		

Queues

2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Volume (vph)	78	12	79	23	39	53	48	1424	94	80	1343	64
Lane Group Flow (vph)	0	112	100	0	92	64	56	1531	108	96	1399	80
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)	30.0	30.0	30.0	30.0	30.0	30.0	20.0	100.0	100.0	20.0	100.0	100.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	13.3%	66.7%	66.7%	13.3%	66.7%	66.7%
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		0.76	0.35		0.45	0.25	0.44	0.61	0.09	0.61	0.54	0.07
Control Delay		72.8	11.6		62.4	13.2	56.1	37.6	11.3	62.5	28.2	8.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		72.8	11.6		62.4	13.2	56.1	37.6	11.3	62.5	28.2	8.4
Queue Length 50th (ft)		107	0		85	0	48	761	38	80	684	20
Queue Length 95th (ft)		108	36		97	35	m55	m866	m63	m103	818	m42
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		203	357		281	327	189	2497	1146	189	2611	1189
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		0.55	0.28		0.33	0.20	0.30	0.61	0.09	0.51	0.54	0.07

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	359	9	196	12	376	1044	10	1125	179
Lane Group Flow (vph)	230	242	248	237	418	1218	20	1293	197
Turn Type	Split		Prot		Prot		Prot		Perm
Protected Phases	8	8	8	7	5	2	1	6	
Permitted Phases									6
Detector Phases	8	8	8	7	5	2	1	6	6
Minimum Initial (s)	7.0	7.0	7.0	5.0	5.0	20.0	5.0	20.0	20.0
Minimum Split (s)	22.0	22.0	22.0	11.0	22.5	26.0	9.0	33.0	33.0
Total Split (s)	30.0	30.0	30.0	27.0	26.0	84.0	9.0	67.0	67.0
Total Split (%)	20.0%	20.0%	20.0%	18.0%	17.3%	56.0%	6.0%	44.7%	44.7%
Yellow Time (s)	4.0	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	2.0	1.5	1.5	1.0	1.5	1.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.82	0.86	0.37	0.86	0.89	0.60	0.34	0.82	0.25
Control Delay	67.3	71.0	16.5	75.4	74.5	15.3	86.4	42.9	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.3	71.0	16.5	75.4	74.5	15.3	86.4	42.9	10.4
Queue Length 50th (ft)	240	254	47	197	182	610	20	603	38
Queue Length 95th (ft)	295	295	72	110	#279	170	28	667	94
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	291	293	688	289	504	2016	59	1570	776
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	0.79	0.83	0.36	0.82	0.83	0.60	0.34	0.82	0.25

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

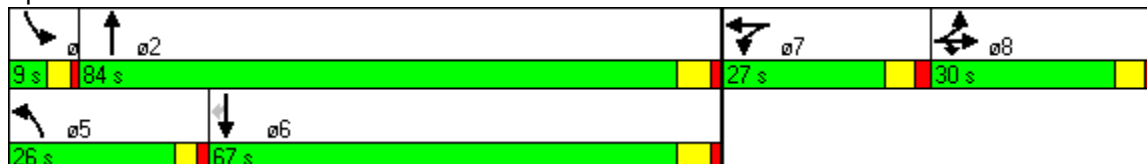
Natural Cycle: 100

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

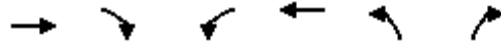
Splits and Phases: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑↑	↑↑	↑
Volume (vph)	386	449	141	340	246	168
Lane Group Flow (vph)	482	478	168	382	296	189
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)	4.0	4.0	5.0	4.0	4.0	
Minimum Split (s)	30.5	30.5	9.0	21.5	21.5	
Total Split (s)	71.5	71.5	33.5	105.0	45.0	150.0
Total Split (%)	47.7%	47.7%	22.3%	70.0%	30.0%	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?						
Recall Mode	C-Max	C-Max	None	C-Max	Max	
v/c Ratio	0.50	0.45	0.74	0.16	0.32	0.12
Control Delay	26.4	3.3	100.2	3.2	44.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	3.3	100.2	3.2	44.5	0.2
Queue Length 50th (ft)	297	1	173	22	119	0
Queue Length 95th (ft)	370	61	m192	m23	148	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	967	1051	348	2383	938	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	0.50	0.45	0.48	0.16	0.32	0.12

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

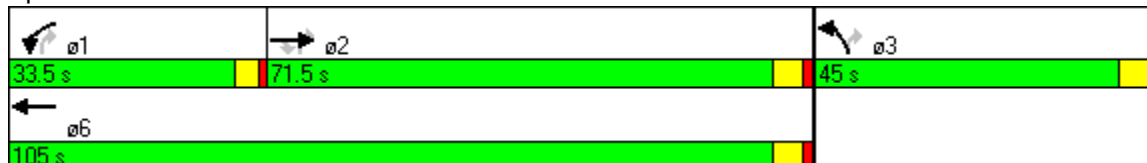
Offset: 30 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Volume (vph)	258	251	244	1381	1178	367
Lane Group Flow (vph)	280	273	265	1501	1280	399
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	28.0	28.0	122.0	122.0	122.0	122.0
Total Split (%)	18.7%	18.7%	81.3%	81.3%	81.3%	81.3%
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?						
v/c Ratio	0.99	0.76	0.96	0.54	0.46	0.30
Control Delay	112.7	46.1	61.3	6.8	1.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.7	46.1	61.3	6.8	1.7	0.5
Queue Length 50th (ft)	277	141	194	248	31	0
Queue Length 95th (ft)	#471	#258	#165	287	33	m0
Internal Link Dist (ft)	502			1044	1040	
Turn Bay Length (ft)						
Base Capacity (vph)	283	360	277	2784	2784	1330
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	0.99	0.76	0.96	0.54	0.46	0.30

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 16 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Pretimed

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

 ø2 122 s	 ø4 28 s
 ø6 122 s	

HCM Unsignalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
7: KULANIHAKOI STREET & PIILANI HIGHWAY

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

6/18/2014



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	

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

6/18/2014

























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
Analysis Period (min)		15
A		























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014

												
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	148	0	0	44	0	0	96	0	0	49
Lane Group Flow (vph)	0	248	28	0	195	8	56	1207	56	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)		10.9	10.9		10.2	10.2	2.9	26.3	26.3	6.1	29.5	29.5
Effective Green, g (s)		11.9	11.9		11.2	11.2	3.9	27.3	27.3	7.1	30.5	30.5
Actuated g/C Ratio		0.16	0.16		0.15	0.15	0.05	0.37	0.37	0.10	0.41	0.41
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	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)		291	256		276	241	94	1314	588	171	1469	657
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		29.9	26.3		29.6	26.5	34.0	22.0	15.1	32.1	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		21.1	0.2		8.0	0.1	6.6	10.8	0.1	8.1	4.3	0.1
Delay (s)		51.1	26.5		37.6	26.6	40.6	32.9	15.2	40.2	23.4	12.9
Level of Service		D	C		D	C	D	C	B	D	C	B
Approach Delay (s)		40.9			35.3			31.3			24.2	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			29.9				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			73.5				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												

HCM Signalized Intersection Capacity Analysis
2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014

												
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		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 Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		63.5										
Intersection Capacity Utilization		57.8%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



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	97
Lane Group Flow (vph)	121	120	153	0	4	0	317	933	0	12	1067	72
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	24.5		0.8		11.4	37.8		0.8	27.2	27.2
Effective Green, g (s)	9.1	9.1	24.5		2.8		11.4	39.8		0.8	29.2	29.2
Actuated g/C Ratio	0.13	0.13	0.36		0.04		0.17	0.58		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)	223	223	997		68		571	2054		21	1509	675
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	0.54	0.54	0.15		0.06		0.56	0.45		0.57	0.71	0.11
Uniform Delay, d1	27.8	27.7	15.0		31.6		26.2	8.2		33.7	16.1	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	2.7	2.5	0.0		0.4		0.7	0.3		21.2	1.8	0.1
Delay (s)	30.4	30.2	15.0		32.0		26.9	8.4		54.9	17.9	11.9
Level of Service	C	C	B		C		C	A		D	B	B
Approach Delay (s)		21.1			32.0		13.1				17.4	
Approach LOS		C			C		B				B	

Intersection Summary

HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	68.5	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			

HCM Signalized Intersection Capacity Analysis
4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



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			

HCM Signalized Intersection Capacity Analysis
8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



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	211	0	0	0	237
Lane Group Flow (vph)	320	66	233	998	971	150
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	14.2	14.2	10.6	37.8	23.2	23.2
Effective Green, g (s)	14.2	14.2	10.6	37.8	23.2	23.2
Actuated g/C Ratio	0.24	0.24	0.18	0.63	0.39	0.39
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)	419	375	313	2230	1368	612
v/s Ratio Prot	c0.18		c0.13	0.28	c0.27	
v/s Ratio Perm		0.17				0.24
v/c Ratio	0.76	0.17	0.74	0.45	0.71	0.24
Uniform Delay, d1	21.3	18.2	23.4	5.7	15.6	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	0.2	9.2	0.7	3.1	0.9
Delay (s)	29.4	18.5	32.7	6.4	18.7	13.4
Level of Service	C	B	C	A	B	B
Approach Delay (s)	24.3			11.3	17.2	
Approach LOS	C			B	B	

Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	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			

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

6/18/2014



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↕	↕↕	↕	↕	↕↕	↕
Volume (vph)	45	137	62	37	38	893	102	95	943	58
Lane Group Flow (vph)	248	176	195	52	56	1207	152	116	1209	84
Turn Type	Perm		Perm		Prot	Perm		Prot	Perm	
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	16.0	16.0	16.0	16.0	10.0	30.0	30.0	13.0	33.0	33.0
Total Split (%)	21.3%	21.3%	21.3%	21.3%	13.3%	40.0%	40.0%	17.3%	44.0%	44.0%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio	0.82	0.43	0.69	0.18	0.39	0.93	0.22	0.54	0.80	0.12
Control Delay	53.7	8.6	41.0	10.2	42.0	37.5	4.3	41.2	24.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	8.6	41.0	10.2	42.0	37.5	4.3	41.2	24.2	4.4
Queue Length 50th (ft)	114	0	87	0	25	287	0	52	268	0
Queue Length 95th (ft)	125	33	129	18	44	280	14	92	283	13
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	304	414	302	308	142	1301	678	215	1527	731
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	0.82	0.43	0.65	0.17	0.39	0.93	0.22	0.54	0.79	0.11

Intersection Summary

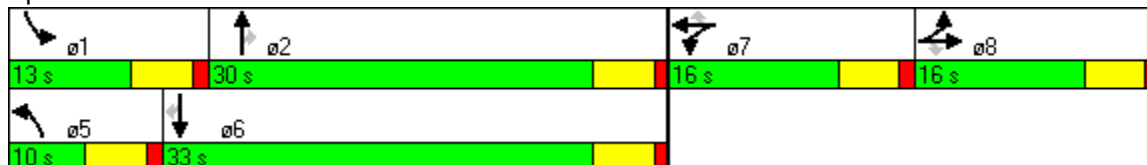
Cycle Length: 75

Actuated Cycle Length: 71.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

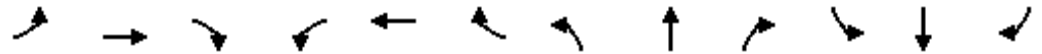
Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Volume (vph)	60	10	56	33	36	39	25	1005	46	63	1197	49
Lane Group Flow (vph)	0	96	72	0	84	48	48	1081	52	72	1301	84
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		0.49	0.24		0.38	0.17	0.27	0.50	0.05	0.39	0.57	0.08
Control Delay		27.4	8.1		23.6	8.7	24.9	8.7	2.8	26.4	8.5	2.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		27.4	8.1		23.6	8.7	24.9	8.7	2.8	26.4	8.5	2.4
Queue Length 50th (ft)		26	0		22	0	13	114	0	20	75	0
Queue Length 95th (ft)		32	20		49	18	21	166	12	49	220	6
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		197	296		220	276	179	2152	983	186	2293	1055
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		0.49	0.24		0.38	0.17	0.27	0.50	0.05	0.39	0.57	0.08

Intersection Summary

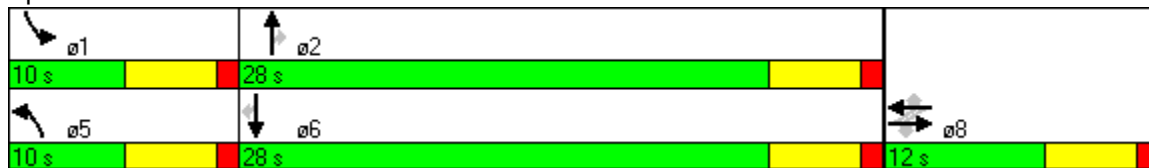
Cycle Length: 50

Actuated Cycle Length: 62

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	181	0	310	0	263	843	6	971	157
Lane Group Flow (vph)	121	120	365	12	317	934	12	1067	169
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	47.0	9.0	30.0	30.0
Total Split (%)	16.3%	16.3%	48.8%	13.8%	32.5%	58.8%	11.3%	37.5%	37.5%
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	0.48	0.47	0.27	0.07	0.49	0.40	0.09	0.70	0.22
Control Delay	33.2	33.1	3.0	21.7	23.5	6.6	32.7	18.3	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	33.1	3.0	21.7	23.5	6.6	32.7	18.3	3.6
Queue Length 50th (ft)	40	40	3	1	51	51	4	140	0
Queue Length 95th (ft)	90	27	27	2	93	194	12	#315	36
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	254	254	1549	176	1071	2408	132	1538	784
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	0.47	0.24	0.07	0.30	0.39	0.09	0.69	0.22

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 60.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

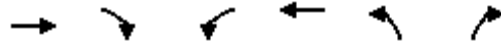
Splits and Phases: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/18/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↓	↑↑	↓↓	↓
Volume (vph)	270	278	129	272	244	136
Lane Group Flow (vph)	300	312	163	296	305	168
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	0.39	0.37	0.70	0.13	0.47	0.11
Control Delay	9.9	2.3	42.1	3.2	21.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	2.3	42.1	3.2	21.0	0.1
Queue Length 50th (ft)	51	0	43	12	38	0
Queue Length 95th (ft)	93	29	#112	21	68	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	933	948	234	2437	646	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	0.32	0.33	0.70	0.12	0.47	0.11

Intersection Summary

Cycle Length: 53

Actuated Cycle Length: 45.9

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: 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

6/18/2014



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Volume (vph)	294	255	214	918	893	356
Lane Group Flow (vph)	320	277	233	998	971	387
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)	20.0	20.0	15.0	40.0	25.0	25.0
Total Split (%)	33.3%	33.3%	25.0%	66.7%	41.7%	41.7%
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			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.76	0.47	0.74	0.45	0.71	0.46
Control Delay	29.4	5.3	37.7	6.9	20.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.3	37.7	6.9	20.1	3.8
Queue Length 50th (ft)	103	0	80	91	161	0
Queue Length 95th (ft)	#200	48	#173	128	227	49
Internal Link Dist (ft)	658			1062	1738	
Turn Bay Length (ft)						
Base Capacity (vph)	472	625	328	2227	1366	849
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	0.68	0.44	0.71	0.45	0.71	0.46

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 60

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



HCM Unsignalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

6/18/2014

								
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					

HCM Unsignalized Intersection Capacity Analysis
6: KAONOULU STREET & SOUTH KIHEI ROAD

6/18/2014



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	

HCM Unsignalized Intersection Capacity Analysis
7: KULANIHAKOI STREET & PIILANI HIGHWAY

6/18/2014



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		

HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

6/18/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔		
Sign Control	Free		Free		Free		Stop		Stop		Stop		
Grade	0%		0%		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		

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

6/18/2014






















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
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis
 13: UPCOUNTRY HIGHWAY & DRIVE D

6/18/2014

													
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)	0	0	0	0	0	0	0	0	0	0	0	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)	601												
pX, platoon unblocked													
vC, conflicting volume	0			0			0	0	0	0	0	0	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	0			0			0	0	0	0	0	0	
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	100			100			100	100	100	100	100	100	
cM capacity (veh/h)	1622			1622			1023	896	1084	1023	896	1084	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2				
Volume Total	0	0	0	0	0	0	0	0	0				
Volume Left	0	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	0	0	0				
cSH	1700	1700	1700	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS							A	A	A				
Approach Delay (s)	0.0			0.0			0.0	0.0					
Approach LOS							A	A					
Intersection Summary													
Average Delay			0.0										
Intersection Capacity Utilization			0.0%	ICU Level of Service					A				
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis
 14: UPCOUNTRY HIGHWAY & DRIVE E























6/18/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↖	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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)	751					
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
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)			1622		1023	1084
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	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			0.0%	ICU Level of Service	A	
Analysis Period (min)			15			

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























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

												
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		1787	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		1787	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	93	88	79	211	40	177	25	1110	40	167	1494	77
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)	101	96	86	229	43	192	27	1207	43	182	1624	84
RTOR Reduction (vph)	0	0	74	0	0	160	0	0	21	0	0	27
Lane Group Flow (vph)	0	197	12	0	272	32	27	1207	22	182	1624	57
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	0.34		c0.10	c0.46	
v/s Ratio Perm			0.05			0.12			0.03			0.05
v/c Ratio		0.78	0.05		0.92	0.12	0.27	0.77	0.03	0.82	0.90	0.07
Uniform Delay, d1		51.9	46.6		51.2	44.3	56.6	29.7	19.8	53.4	27.8	15.6
Progression Factor		1.00	1.00		1.00	1.00	1.33	0.60	0.15	1.22	0.70	0.17
Incremental Delay, d2		13.8	0.1		31.0	0.2	0.5	3.6	0.1	18.6	7.0	0.2
Delay (s)		65.6	46.7		82.3	44.5	75.5	21.4	3.1	83.7	26.6	2.8
Level of Service		E	D		F	D	E	C	A	F	C	A
Approach Delay (s)		59.9			66.7			22.0			31.0	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			34.4		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			125.0		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			80.1%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis
2: UWAPO ROAD & PIILANI HIGHWAY

4/27/2014

													
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)		1783	1583		1798	1583	1770	3539	1583	1770	3539	1583	
Flt Permitted		0.61	1.00		0.52	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1128	1583		960	1583	1770	3539	1583	1770	3539	1583	
Volume (vph)	138	17	106	70	28	106	17	1333	55	34	1324	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	18	115	76	30	115	18	1449	60	37	1439	23	
RTOR Reduction (vph)	0	0	94	0	0	94	0	0	20	0	0	7	
Lane Group Flow (vph)	0	168	21	0	106	21	18	1449	40	37	1439	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)		22.1	22.1		22.1	22.1	4.0	81.9	81.9	6.0	83.9	83.9	
Effective Green, g (s)		23.1	23.1		23.1	23.1	5.0	82.9	82.9	7.0	84.9	84.9	
Actuated g/C Ratio		0.18	0.18		0.18	0.18	0.04	0.66	0.66	0.06	0.68	0.68	
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)		208	293		177	293	71	2347	1050	99	2404	1075	
v/s Ratio Prot							0.01	c0.41		c0.02	0.41		
v/s Ratio Perm		c0.15	0.07		0.11	0.07			0.04			0.01	
v/c Ratio		0.81	0.07		0.60	0.07	0.25	0.62	0.04	0.37	0.60	0.01	
Uniform Delay, d1		48.8	42.1		46.7	42.1	58.2	12.0	7.3	56.9	10.8	6.5	
Progression Factor		1.00	1.00		1.00	1.00	0.60	2.14	4.91	0.76	1.99	2.39	
Incremental Delay, d2		21.0	0.1		6.3	0.1	0.5	0.8	0.0	0.7	0.9	0.0	
Delay (s)		69.9	42.2		53.0	42.2	35.2	26.5	35.7	44.0	22.5	15.6	
Level of Service		E	D		D	D	D	C	D	D	C	B	
Approach Delay (s)		58.6			47.4			27.0			22.9		
Approach LOS		E			D			C			C		
Intersection Summary													
HCM Average Control Delay			29.1		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			125.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			63.7%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

												
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	315	14	2	4	372	1194	8	3	1128	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	342	15	2	4	404	1298	9	3	1226	120
RTOR Reduction (vph)	0	0	142	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	122	129	200	0	17	0	404	1307	0	3	1226	69
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	40.3		4.1		20.3	83.8		1.1	64.1	64.1
Effective Green, g (s)	16.0	16.0	40.8		6.1		20.8	85.8		1.1	66.1	66.1
Actuated g/C Ratio	0.13	0.13	0.33		0.05		0.17	0.69		0.01	0.53	0.53
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	910		85		571	2427		16	1871	837
v/s Ratio Prot	0.07	c0.08			c0.01		c0.12	0.37		0.00	c0.35	
v/s Ratio Perm			0.12									0.08
v/c Ratio	0.57	0.59	0.22		0.20		0.71	0.54		0.19	0.66	0.08
Uniform Delay, d1	51.2	51.4	30.5		57.1		49.2	9.7		61.5	21.2	14.5
Progression Factor	1.10	1.10	1.96		1.00		0.79	1.88		1.00	1.00	1.00
Incremental Delay, d2	3.4	4.3	0.1		1.2		3.3	0.7		2.1	1.8	0.2
Delay (s)	59.7	60.9	59.9		58.3		42.1	19.0		63.6	23.0	14.7
Level of Service	E	E	E		E		D	B		E	C	B
Approach Delay (s)		60.1			58.3			24.4			22.4	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			29.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			59.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

4/27/2014

	→	↘	↙	←	↖	↗
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)	299	265	81	429	418	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	325	288	88	466	454	201
RTOR Reduction (vph)	0	101	0	0	0	0
Lane Group Flow (vph)	325	187	88	466	454	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	79.5	79.5	10.5	94.0	20.0	125.0
Effective Green, g (s)	81.0	81.0	10.5	95.5	21.5	125.0
Actuated g/C Ratio	0.65	0.65	0.08	0.76	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)	1207	1026	149	2704	590	1583
v/s Ratio Prot	0.17		c0.05	0.13	c0.13	
v/s Ratio Perm		0.18				0.13
v/c Ratio	0.27	0.18	0.59	0.17	0.77	0.13
Uniform Delay, d1	9.4	8.8	55.2	4.0	49.4	0.0
Progression Factor	1.00	1.00	1.18	0.24	1.00	1.00
Incremental Delay, d2	0.5	0.4	3.7	0.1	5.4	0.0
Delay (s)	9.9	9.2	68.9	1.1	54.8	0.0
Level of Service	A	A	E	A	D	A
Approach Delay (s)	9.6			11.8	38.0	
Approach LOS	A			B	D	
Intersection Summary						
HCM Average Control Delay			20.5		HCM Level of Service	C
HCM Volume to Capacity ratio			0.40			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			42.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

						
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)	50	236	111	1077	1575	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	257	121	1171	1712	74
RTOR Reduction (vph)	0	201	0	0	0	19
Lane Group Flow (vph)	54	56	121	1171	1712	55
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	10.6	10.6	13.7	106.4	88.7	88.7
Effective Green, g (s)	10.6	10.6	13.7	106.4	88.7	88.7
Actuated g/C Ratio	0.08	0.08	0.11	0.85	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)	150	134	194	3012	2511	1123
v/s Ratio Prot	0.03		c0.07	0.33	c0.48	
v/s Ratio Perm		0.16				0.05
v/c Ratio	0.36	0.42	0.62	0.39	0.68	0.05
Uniform Delay, d1	54.0	54.3	53.2	2.1	10.2	5.5
Progression Factor	1.00	1.00	0.71	3.65	1.17	2.45
Incremental Delay, d2	1.5	2.1	5.3	0.3	0.8	0.0
Delay (s)	55.5	56.3	43.2	7.9	12.7	13.4
Level of Service	E	E	D	A	B	B
Approach Delay (s)	56.2			11.2	12.7	
Approach LOS	E			B	B	
Intersection Summary						
HCM Average Control Delay			16.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			64.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

4/27/2014

						
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	0.39	1.00
Satd. Flow (perm)	1770	1583	1863	1583	731	1863
Volume (vph)	94	37	558	89	31	374
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	40	607	97	34	407
RTOR Reduction (vph)	0	35	0	27	0	0
Lane Group Flow (vph)	102	5	607	70	34	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	7.8	7.8	41.4	41.4	41.4	41.4
Effective Green, g (s)	7.8	7.8	41.4	41.4	41.4	41.4
Actuated g/C Ratio	0.14	0.14	0.72	0.72	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)	241	216	1348	1146	529	1348
v/s Ratio Prot	c0.06		c0.33			0.22
v/s Ratio Perm		0.03		0.06	0.05	
v/c Ratio	0.42	0.03	0.45	0.06	0.06	0.30
Uniform Delay, d1	22.6	21.4	3.2	2.3	2.3	2.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	0.2	0.0	0.1	0.1
Delay (s)	23.8	21.5	3.5	2.3	2.3	2.9
Level of Service	C	C	A	A	A	A
Approach Delay (s)	23.2		3.3			2.9
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			5.4		HCM Level of Service	A
HCM Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			57.2		Sum of lost time (s)	8.0
Intersection Capacity Utilization			41.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

												
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		1779	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.86	1.00		0.70	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1594	1583		1298	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	22	32	124	68	5	24	31	1298	123	50	1890	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)	24	35	135	74	5	26	34	1411	134	54	2054	34
RTOR Reduction (vph)	0	0	92	0	0	23	0	0	34	0	0	8
Lane Group Flow (vph)	0	59	43	0	79	3	34	1411	100	54	2054	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)		12.4	12.4		12.4	12.4	4.7	93.1	93.1	7.5	95.9	95.9
Effective Green, g (s)		12.4	12.4		12.4	12.4	4.7	93.1	93.1	7.5	95.9	95.9
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.04	0.74	0.74	0.06	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)		158	157		129	157	67	2636	1179	106	2715	1214
v/s Ratio Prot							0.02	0.40		c0.03	c0.58	
v/s Ratio Perm		0.04	0.09		0.06	0.02			0.08			0.02
v/c Ratio		0.37	0.27		0.61	0.02	0.51	0.54	0.08	0.51	0.76	0.02
Uniform Delay, d1		52.7	52.1		54.0	50.8	59.0	6.8	4.3	57.0	8.1	3.4
Progression Factor		1.00	1.00		1.00	1.00	1.17	1.33	0.95	1.05	1.34	1.59
Incremental Delay, d2		1.5	1.0		8.3	0.0	5.2	0.7	0.1	3.0	1.6	0.0
Delay (s)		54.2	53.1		62.3	50.8	74.1	9.7	4.3	63.0	12.4	5.5
Level of Service		D	D		E	D	E	A	A	E	B	A
Approach Delay (s)		53.4			59.5			10.6			13.6	
Approach LOS		D			E			B			B	
Intersection Summary												
HCM Average Control Delay			15.5				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			74.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

4/27/2014

						
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)	271	180	101	1121	1597	371
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	196	110	1218	1736	403
RTOR Reduction (vph)	0	147	0	0	0	126
Lane Group Flow (vph)	295	49	110	1218	1736	277
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	24.3	24.3	11.6	92.7	77.1	77.1
Effective Green, g (s)	24.3	24.3	11.6	92.7	77.1	77.1
Actuated g/C Ratio	0.19	0.19	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)	344	308	164	2625	2183	976
v/s Ratio Prot	c0.17		c0.06	0.34	c0.49	
v/s Ratio Perm		0.12				0.25
v/c Ratio	0.86	0.16	0.67	0.46	0.80	0.28
Uniform Delay, d1	48.7	41.9	54.9	6.4	18.0	11.1
Progression Factor	1.00	1.00	1.00	1.00	0.84	0.90
Incremental Delay, d2	18.6	0.2	10.3	0.6	2.1	0.5
Delay (s)	67.2	42.1	65.1	7.0	17.2	10.5
Level of Service	E	D	E	A	B	B
Approach Delay (s)	57.2			11.8	15.9	
Approach LOS	E			B	B	
Intersection Summary						
HCM Average Control Delay			19.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			74.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

	→	↘	←	↙	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↘	↖	↗	↘	↖	↗
Volume (vph)	88	79	40	177	25	1110	40	167	1494	77
Lane Group Flow (vph)	197	86	272	192	27	1207	43	182	1624	84
Turn Type		Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	22.0	22.0
Minimum Split (s)	22.0	22.0	25.0	25.0	18.0	58.0	58.0	20.0	60.0	60.0
Total Split (s)	22.0	22.0	25.0	25.0	18.0	58.0	58.0	20.0	60.0	60.0
Total Split (%)	17.6%	17.6%	20.0%	20.0%	14.4%	46.4%	46.4%	16.0%	48.0%	48.0%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.78	0.29	0.92	0.45	0.17	0.77	0.06	0.82	0.87	0.10
Control Delay	70.2	12.3	84.3	9.8	72.1	21.8	1.3	87.7	25.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	12.3	84.3	9.8	72.1	21.8	1.3	87.7	25.7	1.5
Queue Length 50th (ft)	155	0	218	0	0	473	1	127	727	6
Queue Length 95th (ft)	#266	48	#380	66	56	105	1	#270	#818	m3
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	262	302	300	426	198	1561	719	227	1861	859
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	0.75	0.28	0.91	0.45	0.14	0.77	0.06	0.80	0.87	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: 125

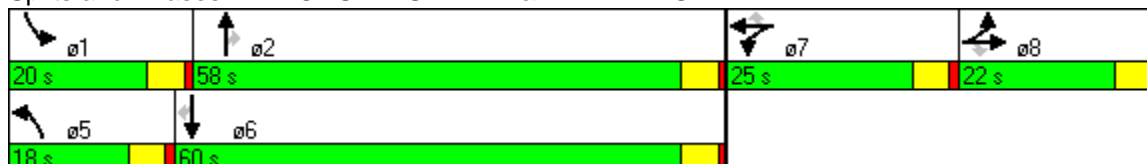
Control Type: Actuated-Coordinated

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	17	106	70	28	106	17	1333	55	34	1324	21
Lane Group Flow (vph)	0	168	115	0	106	115	18	1449	60	37	1439	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		0.79	0.30		0.55	0.30	0.12	0.60	0.05	0.24	0.58	0.02
Control Delay		64.4	9.0		53.3	9.0	32.6	28.4	12.2	43.9	23.1	8.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		64.4	9.0		53.3	9.0	32.6	28.4	12.2	43.9	23.1	8.8
Queue Length 50th (ft)		127	0		76	0	14	486	15	25	566	5
Queue Length 95th (ft)		#226	50		138	50	m18	590	m27	m44	714	m15
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		239	420		219	420	156	2404	1095	156	2489	1120
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		0.70	0.27		0.48	0.27	0.12	0.60	0.05	0.24	0.58	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

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: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	211	20	315	2	372	1194	3	1128	110
Lane Group Flow (vph)	122	129	342	21	404	1307	3	1226	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	50.9	13.0	27.9	79.0	10.0	61.1	61.1
Total Split (%)	18.4%	18.4%	40.7%	10.4%	22.3%	63.2%	8.0%	48.9%	48.9%
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	0.33	0.17	0.71	0.51	0.04	0.63	0.13
Control Delay	62.0	62.8	21.6	50.1	42.1	17.7	58.7	23.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	62.8	21.6	50.1	42.1	17.7	58.7	23.9	4.7
Queue Length 50th (ft)	105	112	34	13	169	420	2	406	5
Queue Length 95th (ft)	173	181	125	40	210	590	13	513	39
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	256	258	1109	130	656	2584	85	1939	917
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	0.31	0.16	0.62	0.51	0.04	0.63	0.13

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: 70

Control Type: Actuated-Coordinated

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

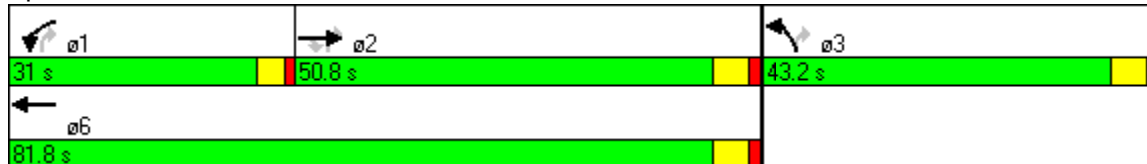
4/27/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	299	265	81	429	418	185
Lane Group Flow (vph)	325	288	88	466	454	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)	50.8	50.8	31.0	81.8	43.2	125.0
Total Split (%)	40.6%	40.6%	24.8%	65.4%	34.6%	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?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	Min	C-Min	Min	
v/c Ratio	0.27	0.26	0.59	0.17	0.77	0.13
Control Delay	11.3	1.9	65.5	1.2	50.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	1.9	65.5	1.2	50.1	0.2
Queue Length 50th (ft)	102	0	74	11	183	0
Queue Length 95th (ft)	192	38	m124	17	227	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1207	1127	382	2703	1077	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	0.27	0.26	0.23	0.17	0.42	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
 m Volume for 95th percentile queue is metered by upstream signal.













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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	236	111	1077	1575	68
Lane Group Flow (vph)	54	257	121	1171	1712	74
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)	25.0	25.0	21.0	100.0	79.0	79.0
Total Split (%)	20.0%	20.0%	16.8%	80.0%	63.2%	63.2%
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
Recall Mode	None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.36	0.76	0.62	0.39	0.68	0.06
Control Delay	53.4	16.1	43.2	9.2	14.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	16.1	43.2	9.2	14.8	6.4
Queue Length 50th (ft)	43	29	91	267	391	10
Queue Length 95th (ft)	80	114	139	466	450	m14
Internal Link Dist (ft)	253			2017	2865	
Turn Bay Length (ft)						
Base Capacity (vph)	297	449	247	3012	2511	1142
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	0.18	0.57	0.49	0.39	0.68	0.06

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: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY

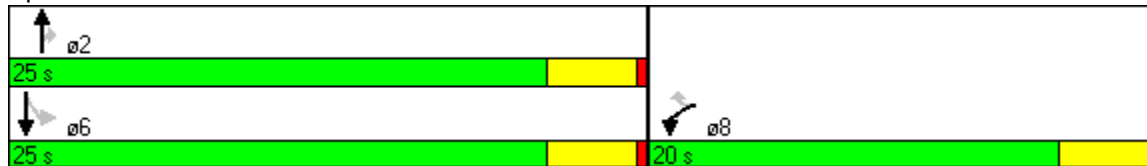


	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	94	37	558	89	31	374
Lane Group Flow (vph)	102	40	607	97	34	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	25.0	25.0	25.0	25.0
Total Split (%)	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
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	0.35	0.14	0.44	0.08	0.09	0.29
Control Delay	12.1	5.4	5.5	1.5	4.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	5.4	5.5	1.5	4.9	4.4
Queue Length 50th (ft)	19	0	60	0	2	34
Queue Length 95th (ft)	43	14	143	12	12	83
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	489	467	1380	1197	366	1380
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	0.21	0.09	0.44	0.08	0.09	0.29

Intersection Summary

Cycle Length: 45
 Actuated Cycle Length: 57.6
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	32	124	68	5	24	31	1298	123	50	1890	31
Lane Group Flow (vph)	0	59	135	0	79	26	34	1411	134	54	2054	34
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)	21.0	21.0	21.0	21.0	21.0	21.0	11.0	90.0	90.0	14.0	93.0	93.0
Total Split (%)	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	8.8%	72.0%	72.0%	11.2%	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		0.37	0.54		0.61	0.14	0.33	0.53	0.11	0.44	0.74	0.03
Control Delay		54.2	20.6		61.1	17.8	73.1	10.9	1.2	64.4	14.0	2.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		54.2	20.6		61.1	17.8	73.1	10.9	1.2	64.4	14.0	2.7
Queue Length 50th (ft)		45	25		62	0	27	365	3	45	495	1
Queue Length 95th (ft)		87	87		112	28	m56	475	m13	m66	796	m6
Internal Link Dist (ft)		212			349			829			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		221	303		177	238	107	2659	1223	144	2759	1242
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		0.27	0.45		0.45	0.11	0.32	0.53	0.11	0.38	0.74	0.03

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: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

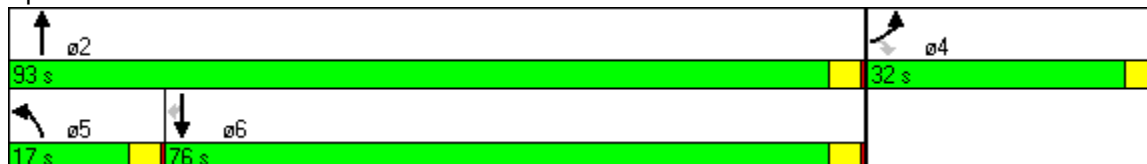
4/27/2014

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	271	180	101	1121	1597	371
Lane Group Flow (vph)	295	196	110	1218	1736	403
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)	32.0	32.0	17.0	93.0	76.0	76.0
Total Split (%)	25.6%	25.6%	13.6%	74.4%	60.8%	60.8%
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	0.86	0.43	0.67	0.46	0.80	0.37
Control Delay	60.4	9.6	68.4	7.4	18.5	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	9.6	68.4	7.4	18.5	3.1
Queue Length 50th (ft)	229	9	86	187	669	40
Queue Length 95th (ft)	#335	73	150	246	476	33
Internal Link Dist (ft)	652			1058	2861	
Turn Bay Length (ft)						
Base Capacity (vph)	396	496	184	2624	2183	1102
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	0.40	0.60	0.46	0.80	0.37

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: 75
 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



HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

4/27/2014

												
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	96	7	20	107	52	13	6	63	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	104	8	22	116	57	14	7	68	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	173			112			335	374	108	414	350	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	173			112			335	374	108	414	350	145
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			98	99	93	66	99	98
cM capacity (veh/h)	1404			1478			591	538	946	492	556	903
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	25	112	22	173	14	75	165	18				
Volume Left	25	0	22	0	14	0	165	0				
Volume Right	0	8	0	57	0	68	0	15				
cSH	1404	1700	1478	1700	591	887	492	813				
Volume to Capacity	0.02	0.07	0.01	0.10	0.02	0.08	0.34	0.02				
Queue Length 95th (ft)	1	0	1	0	2	7	37	2				
Control Delay (s)	7.6	0.0	7.5	0.0	11.2	9.4	16.0	9.5				
Lane LOS	A		A		B	A	C	A				
Approach Delay (s)	1.4		0.8		9.7		15.3					
Approach LOS					A		C					
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			37.2%		ICU Level of Service				A			
Analysis Period (min)			15									























HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

4/27/2014

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)	30	118	30	4	100	2	9	0	2	3	0	66
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)	33	128	33	4	109	2	10	0	2	3	0	72
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	111			161			399	329	145	314	345	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	111			161			399	329	145	314	345	110
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	92
cM capacity (veh/h)	1479			1418			509	575	903	625	564	944
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	33	161	4	111	12	75						
Volume Left	33	0	4	0	10	3						
Volume Right	0	33	0	2	2	72						
cSH	1479	1700	1418	1700	553	923						
Volume to Capacity	0.02	0.09	0.00	0.07	0.02	0.08						
Queue Length 95th (ft)	2	0	0	0	2	7						
Control Delay (s)	7.5	0.0	7.5	0.0	11.7	9.2						
Lane LOS	A		A		B	A						
Approach Delay (s)	1.3		0.3		11.7	9.2						
Approach LOS					B	A						
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			19.8%		ICU Level of Service				A			
Analysis Period (min)			15									























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

													
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)	115	76	81	204	66	168	104	1486	56	138	1398	84	
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)	125	83	88	222	72	183	113	1615	61	150	1520	91	
RTOR Reduction (vph)	0	0	77	0	0	151	0	0	19	0	0	30	
Lane Group Flow (vph)	0	208	11	0	294	32	113	1615	42	150	1520	61	
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)		18.0	18.0		25.4	25.4	11.4	73.6	73.6	13.0	75.2	75.2	
Effective Green, g (s)		19.0	19.0		26.4	26.4	12.4	74.6	74.6	14.0	76.2	76.2	
Actuated g/C Ratio		0.13	0.13		0.18	0.18	0.08	0.50	0.50	0.09	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)		229	201		316	279	146	1760	787	165	1798	804	
v/s Ratio Prot		c0.12			c0.16		0.06	c0.46		c0.08	0.43		
v/s Ratio Perm			0.06			0.12			0.04			0.06	
v/c Ratio		0.91	0.06		0.93	0.12	0.77	0.92	0.05	0.91	0.85	0.08	
Uniform Delay, d1		64.6	57.6		60.9	52.0	67.4	34.9	19.5	67.4	31.8	18.9	
Progression Factor		1.00	1.00		1.00	1.00	1.10	0.66	0.31	0.80	1.36	2.66	
Incremental Delay, d2		35.8	0.1		32.9	0.2	17.7	8.0	0.1	38.0	4.2	0.2	
Delay (s)		100.5	57.7		93.8	52.2	92.0	30.9	6.2	92.3	47.4	50.4	
Level of Service		F	E		F	D	F	C	A	F	D	D	
Approach Delay (s)		87.8			77.9			34.0			51.4		
Approach LOS		F			E			C			D		
Intersection Summary													
HCM Average Control Delay			49.6		HCM Level of Service						D		
HCM Volume to Capacity ratio			0.92										
Actuated Cycle Length (s)			150.0		Sum of lost time (s)					16.0			
Intersection Capacity Utilization			80.2%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													


























HCM Signalized Intersection Capacity Analysis
2: UWAPO ROAD & PIILANI HIGHWAY

4/27/2014

													
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)		1791	1583		1823	1583	1770	3539	1583	1770	3539	1583	
Flt Permitted		0.62	1.00		0.72	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1155	1583		1335	1583	1770	3539	1583	1770	3539	1583	
Volume (vph)	78	19	79	33	42	67	48	1544	108	100	1487	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	21	86	36	46	73	52	1678	117	109	1616	70	
RTOR Reduction (vph)	0	0	76	0	0	64	0	0	25	0	0	15	
Lane Group Flow (vph)	0	106	10	0	82	9	52	1678	92	109	1616	55	
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm	
Protected Phases		8		8		8	5	2		1	6		
Permitted Phases	8		8	8		8			2			6	
Actuated Green, G (s)		17.7	17.7		17.7	17.7	8.4	104.7	104.7	13.6	109.9	109.9	
Effective Green, g (s)		17.7	17.7		17.7	17.7	9.4	105.7	105.7	14.6	110.9	110.9	
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.06	0.70	0.70	0.10	0.74	0.74	
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)		136	187		158	187	111	2494	1115	172	2617	1170	
v/s Ratio Prot							0.03	c0.47		c0.06	0.46		
v/s Ratio Perm		c0.09	0.05		0.06	0.05			0.07			0.04	
v/c Ratio		0.78	0.05		0.52	0.05	0.47	0.67	0.08	0.63	0.62	0.05	
Uniform Delay, d1		64.3	58.7		62.2	58.7	67.9	12.4	6.9	65.1	9.4	5.3	
Progression Factor		1.00	1.00		1.00	1.00	1.24	1.22	1.05	1.11	1.63	1.39	
Incremental Delay, d2		24.0	0.1		2.9	0.1	1.5	0.7	0.1	5.8	0.9	0.1	
Delay (s)		88.3	58.8		65.0	58.8	85.7	15.8	7.3	77.8	16.1	7.4	
Level of Service		F	E		E	E	F	B	A	E	B	A	
Approach Delay (s)		75.1			62.1			17.2			19.5		
Approach LOS		E			E			B			B		
Intersection Summary													
HCM Average Control Delay			22.8		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			150.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			70.2%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

												
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	217	33	12	44	396	1158	15	10	1269	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	236	36	13	48	430	1259	16	11	1379	195
RTOR Reduction (vph)	0	0	112	0	24	0	0	0	0	0	0	65
Lane Group Flow (vph)	201	210	124	0	73	0	430	1275	0	11	1379	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)	21.9	21.9	49.8		9.1		21.9	95.0		2.0	74.6	74.6
Effective Green, g (s)	23.9	23.9	50.3		11.1		22.4	97.0		2.0	76.6	76.6
Actuated g/C Ratio	0.16	0.16	0.34		0.07		0.15	0.65		0.01	0.51	0.51
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)	268	269	935		126		513	2285		24	1807	808
v/s Ratio Prot	0.12	c0.12			c0.06		c0.13	0.36		0.01	c0.39	
v/s Ratio Perm			0.08									0.12
v/c Ratio	0.75	0.78	0.13		0.58		0.84	0.56		0.46	0.76	0.16
Uniform Delay, d1	60.2	60.5	34.7		67.2		62.0	14.6		73.5	29.4	19.6
Progression Factor	0.76	0.77	1.68		1.00		1.04	1.10		1.00	1.00	1.00
Incremental Delay, d2	10.8	13.2	0.0		6.3		8.6	0.8		5.0	3.1	0.4
Delay (s)	56.8	59.6	58.2		73.5		72.9	16.9		78.4	32.5	20.0
Level of Service	E	E	E		E		E	B		E	C	B
Approach Delay (s)		58.2			73.5			31.0			31.3	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			36.5				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			73.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD















4/27/2014

	→	↘	↙	←	↖	↗
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)	407	518	141	360	275	178
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	442	563	153	391	299	193
RTOR Reduction (vph)	0	244	0	0	0	0
Lane Group Flow (vph)	442	319	153	391	299	193
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	83.4	83.4	18.2	105.6	33.4	150.0
Effective Green, g (s)	84.9	84.9	18.2	107.1	34.9	150.0
Actuated g/C Ratio	0.57	0.57	0.12	0.71	0.23	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)	1054	896	215	2527	799	1583
v/s Ratio Prot	0.24		c0.09	0.11	c0.09	
v/s Ratio Perm		0.36				0.12
v/c Ratio	0.42	0.36	0.71	0.15	0.37	0.12
Uniform Delay, d1	18.5	17.7	63.4	6.9	48.4	0.0
Progression Factor	1.00	1.00	1.44	0.28	1.00	1.00
Incremental Delay, d2	1.2	1.1	7.3	0.1	1.3	0.0
Delay (s)	19.8	18.8	98.7	2.1	49.7	0.0
Level of Service	B	B	F	A	D	A
Approach Delay (s)	19.2			29.2	30.2	
Approach LOS	B			C	C	
Intersection Summary						
HCM Average Control Delay			24.5		HCM Level of Service	C
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			47.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis













5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

						
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)	49	189	135	1594	1522	92
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	205	147	1733	1654	100
RTOR Reduction (vph)	0	191	0	0	0	19
Lane Group Flow (vph)	53	14	147	1733	1654	81
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	9.9	9.9	17.3	132.1	110.8	110.8
Effective Green, g (s)	9.9	9.9	17.3	132.1	110.8	110.8
Actuated g/C Ratio	0.07	0.07	0.12	0.88	0.74	0.74
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)	117	104	204	3117	2614	1169
v/s Ratio Prot	0.03		c0.08	0.49	c0.47	
v/s Ratio Perm		0.13				0.06
v/c Ratio	0.45	0.13	0.72	0.56	0.63	0.07
Uniform Delay, d1	67.4	66.0	64.0	2.1	9.6	5.4
Progression Factor	1.00	1.00	0.98	1.70	0.87	1.40
Incremental Delay, d2	2.8	0.6	9.3	0.6	0.6	0.1
Delay (s)	70.2	66.6	71.9	4.1	9.0	7.6
Level of Service	E	E	E	A	A	A
Approach Delay (s)	67.3			9.4	8.9	
Approach LOS	E			A	A	
Intersection Summary						
HCM Average Control Delay			13.0		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			62.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

4/27/2014

						
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)	80	37	544	157	67	522
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	40	591	171	73	567
RTOR Reduction (vph)	0	36	0	61	0	0
Lane Group Flow (vph)	87	4	591	110	73	567
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	6.7	6.7	40.8	40.8	3.7	48.5
Effective Green, g (s)	6.7	6.7	40.8	40.8	3.7	48.5
Actuated g/C Ratio	0.11	0.11	0.65	0.65	0.06	0.77
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)	188	168	1203	1022	104	1430
v/s Ratio Prot	c0.05		c0.32		c0.04	0.30
v/s Ratio Perm		0.03		0.11		
v/c Ratio	0.46	0.03	0.49	0.11	0.70	0.40
Uniform Delay, d1	26.6	25.3	5.8	4.3	29.2	2.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	0.3	0.0	19.2	0.2
Delay (s)	28.4	25.4	6.1	4.3	48.5	2.6
Level of Service	C	C	A	A	D	A
Approach Delay (s)	27.4		5.7			7.9
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			8.4		HCM Level of Service	A
HCM Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			63.2		Sum of lost time (s)	12.0
Intersection Capacity Utilization			46.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

													
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)		1787	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)		1359	1583		1319	1583	1770	3539	1583	1770	3539	1583	
Volume (vph)	36	6	90	35	3	12	80	1783	27	11	1611	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)	39	7	98	38	3	13	87	1938	29	12	1751	85	
RTOR Reduction (vph)	0	0	91	0	0	12	0	0	4	0	0	15	
Lane Group Flow (vph)	0	46	7	0	41	1	87	1938	25	12	1751	70	
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)		10.0	10.0		10.0	10.0	12.4	124.9	124.9	3.1	115.6	115.6	
Effective Green, g (s)		10.0	10.0		10.0	10.0	12.4	124.9	124.9	3.1	115.6	115.6	
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)		91	106		88	106	146	2947	1318	37	2727	1220	
v/s Ratio Prot							c0.05	c0.55		0.01	0.49		
v/s Ratio Perm		0.03	0.06		0.03	0.01			0.02			0.05	
v/c Ratio		0.51	0.06		0.47	0.01	0.60	0.66	0.02	0.32	0.64	0.06	
Uniform Delay, d1		67.6	65.6		67.4	65.4	66.4	4.6	2.1	72.4	7.8	4.1	
Progression Factor		1.00	1.00		1.00	1.00	0.93	0.79	0.99	0.74	0.96	1.87	
Incremental Delay, d2		4.4	0.2		3.9	0.0	5.3	1.0	0.0	4.0	0.9	0.1	
Delay (s)		72.0	65.8		71.3	65.4	67.0	4.6	2.1	57.3	8.4	7.8	
Level of Service		E	E		E	E	E	A	A	E	A	A	
Approach Delay (s)		67.8			69.9			7.2			8.7		
Approach LOS		E			E			A			A		
Intersection Summary													
HCM Average Control Delay			10.8		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.66										
Actuated Cycle Length (s)			150.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization			71.6%		ICU Level of Service						C		
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

4/27/2014

						
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)	270	251	244	1491	1296	386
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	273	265	1621	1409	420
RTOR Reduction (vph)	0	220	0	0	0	127
Lane Group Flow (vph)	293	53	265	1621	1409	293
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	29.0	29.0	26.3	113.0	82.7	82.7
Effective Green, g (s)	29.0	29.0	26.3	113.0	82.7	82.7
Actuated g/C Ratio	0.19	0.19	0.18	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)	342	306	310	2666	1951	873
v/s Ratio Prot	0.17		c0.15	0.46	c0.40	
v/s Ratio Perm		0.17				0.27
v/c Ratio	0.86	0.17	0.85	0.61	0.72	0.34
Uniform Delay, d1	58.5	50.5	60.0	8.4	25.1	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.21	1.66
Incremental Delay, d2	18.6	0.3	19.9	1.0	1.9	0.8
Delay (s)	77.1	50.8	79.9	9.5	32.3	31.6
Level of Service	E	D	E	A	C	C
Approach Delay (s)	64.4			19.4	32.2	
Approach LOS	E			B	C	
Intersection Summary						
HCM Average Control Delay			30.8		HCM Level of Service	C
HCM Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			74.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

	→	↘	←	↙	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖↖	↖	↖	↖↖	↖
Volume (vph)	76	81	66	168	104	1486	56	138	1398	84
Lane Group Flow (vph)	208	88	294	183	113	1615	61	150	1520	91
Turn Type		Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	23.0	23.0	31.0	31.0	17.0	78.0	78.0	18.0	79.0	79.0
Total Split (%)	15.3%	15.3%	20.7%	20.7%	11.3%	52.0%	52.0%	12.0%	52.7%	52.7%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.91	0.32	0.93	0.43	0.77	0.92	0.08	0.91	0.84	0.11
Control Delay	103.7	14.1	92.0	9.9	97.2	31.6	3.1	98.0	48.5	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.7	14.1	92.0	9.9	97.2	31.6	3.1	98.0	48.5	21.3
Queue Length 50th (ft)	204	0	286	0	105	597	9	154	592	33
Queue Length 95th (ft)	#360	54	#461	69	#202	748	m13	#286	863	m105
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	229	277	323	435	153	1760	806	165	1799	834
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	0.91	0.32	0.91	0.42	0.74	0.92	0.08	0.91	0.84	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

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: 1: OHUKAI STREET & PIILANI HIGHWAY

↖ ø1	↑ ø2	↖ ø7	↗ ø8
18 s	78 s	31 s	23 s
↖ ø5	↓ ø6		
17 s	79 s		

Queues

2: UWAPO ROAD & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	19	79	33	42	67	48	1544	108	100	1487	64
Lane Group Flow (vph)	0	106	86	0	82	73	52	1678	117	109	1616	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)	32.0	32.0	32.0	32.0	32.0	32.0	19.0	92.0	92.0	26.0	99.0	99.0
Total Split (%)	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	12.7%	61.3%	61.3%	17.3%	66.0%	66.0%
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		0.72	0.33		0.44	0.29	0.41	0.67	0.10	0.63	0.61	0.06
Control Delay		68.7	11.8		62.3	12.6	83.8	18.1	3.6	74.9	18.5	3.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		68.7	11.8		62.3	12.6	83.8	18.1	3.6	74.9	18.5	3.6
Queue Length 50th (ft)		102	0		76	0	46	834	15	94	763	10
Queue Length 95th (ft)		161	50		126	47	m51	914	m38	m125	921	m27
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		234	365		293	355	177	2494	1141	260	2640	1196
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		0.45	0.24		0.28	0.21	0.29	0.67	0.10	0.42	0.61	0.06

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	369	9	217	12	396	1158	10	1269	179
Lane Group Flow (vph)	201	210	236	97	430	1275	11	1379	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	60.0	16.0	29.0	94.0	9.0	74.0	74.0
Total Split (%)	20.7%	20.7%	40.0%	10.7%	19.3%	62.7%	6.0%	49.3%	49.3%
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	0.75	0.78	0.23	0.64	0.84	0.55	0.19	0.76	0.22
Control Delay	56.3	57.9	16.8	65.3	70.9	17.0	77.9	34.4	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	57.9	16.8	65.3	70.9	17.0	77.9	34.4	8.3
Queue Length 50th (ft)	196	206	55	68	221	233	11	595	32
Queue Length 95th (ft)	292	304	98	132	278	528	34	712	83
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	303	304	1080	160	572	2339	59	1805	873
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	0.66	0.69	0.22	0.61	0.75	0.55	0.19	0.76	0.22

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

4/27/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	407	518	141	360	275	178
Lane Group Flow (vph)	442	563	153	391	299	193
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)	4.0	4.0	5.0	4.0	4.0	
Minimum Split (s)	30.5	30.5	9.0	21.5	21.5	
Total Split (s)	71.1	71.1	40.0	111.1	38.9	150.0
Total Split (%)	47.4%	47.4%	26.7%	74.1%	25.9%	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	C-Max	C-Max	None	C-Max	Max	
v/c Ratio	0.42	0.49	0.71	0.15	0.37	0.12
Control Delay	21.3	3.1	91.1	2.1	50.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	3.1	91.1	2.1	50.0	0.2
Queue Length 50th (ft)	236	0	156	16	127	0
Queue Length 95th (ft)	382	61	m144	17	173	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1054	1140	425	2527	799	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	0.42	0.49	0.36	0.15	0.37	0.12

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 30 (20%), 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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Volume (vph)	49	189	135	1594	1522	92
Lane Group Flow (vph)	53	205	147	1733	1654	100
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)	29.0	29.0	30.0	121.0	91.0	91.0
Total Split (%)	19.3%	19.3%	20.0%	80.7%	60.7%	60.7%
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			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.45	0.69	0.72	0.56	0.63	0.08
Control Delay	67.8	11.7	65.8	4.5	10.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	11.7	65.8	4.5	10.1	3.8
Queue Length 50th (ft)	51	0	145	130	275	7
Queue Length 95th (ft)	96	81	202	472	304	m11
Internal Link Dist (ft)	253			2017	2865	
Turn Bay Length (ft)						
Base Capacity (vph)	295	435	307	3116	2613	1187
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	0.18	0.47	0.48	0.56	0.63	0.08

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY



Queues

6: KAONOULU STREET & SOUTH KIHEI ROAD

4/27/2014

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	80	37	544	157	67	522
Lane Group Flow (vph)	87	40	591	171	73	567
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	31.0	31.0	9.0	40.0
Total Split (%)	33.3%	33.3%	51.7%	51.7%	15.0%	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	0.35	0.15	0.46	0.15	0.46	0.38
Control Delay	18.0	8.1	9.1	1.9	30.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	8.1	9.1	1.9	30.4	4.1
Queue Length 50th (ft)	20	0	111	0	18	54
Queue Length 95th (ft)	56	20	224	23	#59	124
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	435	419	1314	1167	157	1503
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	0.20	0.10	0.45	0.15	0.46	0.38

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 61.8

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	6	90	35	3	12	80	1783	27	11	1611	78
Lane Group Flow (vph)	0	46	98	0	41	13	87	1938	29	12	1751	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
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)	27.0	27.0	27.0	27.0	27.0	27.0	25.0	107.0	107.0	16.0	98.0	98.0
Total Split (%)	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	16.7%	71.3%	71.3%	10.7%	65.3%	65.3%
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 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		0.48	0.50		0.44	0.11	0.59	0.65	0.02	0.15	0.64	0.07
Control Delay		68.7	13.8		68.3	27.2	64.2	4.9	1.5	51.4	9.4	3.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		68.7	13.8		68.3	27.2	64.2	4.9	1.5	51.4	9.4	3.7
Queue Length 50th (ft)		44	0		39	0	85	138	0	11	208	3
Queue Length 95th (ft)		88	58		80	23	m136	435	m5	m20	321	m21
Internal Link Dist (ft)		212			261			1847			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		219	326		214	254	248	3003	1347	142	2727	1234
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		0.21	0.30		0.19	0.05	0.35	0.65	0.02	0.08	0.64	0.07

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 40 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.















Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

4/27/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Volume (vph)	270	251	244	1491	1296	386
Lane Group Flow (vph)	293	273	265	1621	1409	420
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)	39.0	39.0	36.0	111.0	75.0	75.0
Total Split (%)	26.0%	26.0%	24.0%	74.0%	50.0%	50.0%
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	0.86	0.52	0.85	0.61	0.72	0.42
Control Delay	67.8	7.8	69.8	10.3	35.3	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	7.8	69.8	10.3	35.3	12.8
Queue Length 50th (ft)	277	0	253	353	566	121
Queue Length 95th (ft)	376	76	347	469	739	135
Internal Link Dist (ft)	745			1063	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	413	579	378	2666	1950	1000
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	0.71	0.47	0.70	0.61	0.72	0.42

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75





















Control Type: Actuated-Coordinated

Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY

 ø2	 ø4
111 s	39 s
 ø5	 ø6
36 s	75 s

HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

4/27/2014

												
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	134	16	39	113	73	9	8	34	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	146	17	42	123	79	10	9	37	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	202			163			463	522	154	515	491	162
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	202			163			463	522	154	515	491	162
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			98	98	96	75	98	98
cM capacity (veh/h)	1370			1416			469	433	892	424	450	882
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	40	163	42	202	10	46	104	26				
Volume Left	40	0	42	0	10	0	104	0				
Volume Right	0	17	0	79	0	37	0	15				
cSH	1370	1700	1416	1700	469	742	424	630				
Volume to Capacity	0.03	0.10	0.03	0.12	0.02	0.06	0.25	0.04				
Queue Length 95th (ft)	2	0	2	0	2	5	24	3				
Control Delay (s)	7.7	0.0	7.6	0.0	12.8	10.2	16.2	11.0				
Lane LOS	A		A		B	B	C	B				
Approach Delay (s)	1.5		1.3		10.6		15.2					
Approach LOS					B		C					
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			35.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

4/27/2014

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)	82	179	16	2	133	6	2	1	3	3	1	58
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)	89	195	17	2	145	7	2	1	3	3	1	63
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	151			212			594	537	203	529	542	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			212			594	537	203	529	542	148
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			99	100	100	99	100	93
cM capacity (veh/h)	1430			1358			368	422	837	435	419	899
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	89	212	2	151	7	67						
Volume Left	89	0	2	0	2	3						
Volume Right	0	17	0	7	3	63						
cSH	1430	1700	1358	1700	527	840						
Volume to Capacity	0.06	0.12	0.00	0.09	0.01	0.08						
Queue Length 95th (ft)	5	0	0	0	1	7						
Control Delay (s)	7.7	0.0	7.7	0.0	11.9	9.7						
Lane LOS	A		A		B	A						
Approach Delay (s)	2.3		0.1		11.9	9.7						
Approach LOS					B	A						
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			27.6%		ICU Level of Service				A			
Analysis Period (min)			15									























HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

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)	177	45	137	67	62	37	38	1007	102	95	1089	105	
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)	192	49	149	73	67	40	41	1095	111	103	1184	114	
RTOR Reduction (vph)	0	0	124	0	0	37	0	0	65	0	0	61	
Lane Group Flow (vph)	0	241	25	0	140	3	41	1095	46	103	1184	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)		10.9	10.9		4.6	4.6	2.8	28.0	28.0	6.1	31.3	31.3	
Effective Green, g (s)		11.9	11.9		5.6	5.6	3.8	29.0	29.0	7.1	32.3	32.3	
Actuated g/C Ratio		0.17	0.17		0.08	0.08	0.05	0.42	0.42	0.10	0.46	0.46	
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)		306	271		146	127	97	1475	660	181	1642	735	
v/s Ratio Prot		c0.13			c0.08		0.02	0.31		c0.06	c0.33		
v/s Ratio Perm			0.09			0.03			0.07			0.07	
v/c Ratio		0.79	0.09		0.96	0.03	0.42	0.74	0.07	0.57	0.72	0.07	
Uniform Delay, d1		27.6	24.3		31.9	29.5	31.8	17.1	12.2	29.8	15.0	10.3	
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		12.9	0.2		61.3	0.1	1.1	2.5	0.1	2.4	2.0	0.1	
Delay (s)		40.6	24.5		93.2	29.6	32.9	19.6	12.3	32.2	17.0	10.4	
Level of Service		D	C		F	C	C	B	B	C	B	B	
Approach Delay (s)		34.4			79.1			19.4			17.6		
Approach LOS		C			E			B			B		
Intersection Summary													
HCM Average Control Delay			23.8		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			69.6		Sum of lost time (s)					16.0			
Intersection Capacity Utilization			63.3%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													






















HCM Signalized Intersection Capacity Analysis
2: UWAPO ROAD & PIILANI HIGHWAY

4/27/2014

												
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)		1789	1583		1815	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.70	1.00		0.79	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1312	1583		1479	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	60	13	56	42	39	51	25	1137	60	68	1381	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	14	61	46	42	55	27	1236	65	74	1501	53
RTOR Reduction (vph)	0	0	54	0	0	49	0	0	22	0	0	17
Lane Group Flow (vph)	0	79	7	0	88	6	27	1236	43	74	1501	36
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)		6.9	6.9		6.9	6.9	2.3	46.9	46.9	3.5	48.1	48.1
Effective Green, g (s)		7.9	7.9		7.9	7.9	3.3	47.9	47.9	4.5	49.1	49.1
Actuated g/C Ratio		0.11	0.11		0.11	0.11	0.05	0.66	0.66	0.06	0.68	0.68
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)		143	173		162	173	81	2345	1049	110	2403	1075
v/s Ratio Prot							0.02	0.35		c0.04	c0.42	
v/s Ratio Perm		c0.06	0.04		0.06	0.03			0.04			0.03
v/c Ratio		0.55	0.04		0.54	0.03	0.33	0.53	0.04	0.67	0.62	0.03
Uniform Delay, d1		30.5	28.8		30.5	28.8	33.4	6.3	4.2	33.2	6.5	3.8
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		5.6	0.1		4.6	0.1	0.9	0.4	0.0	12.0	0.7	0.0
Delay (s)		36.1	28.9		35.1	28.9	34.3	6.7	4.3	45.2	7.2	3.8
Level of Service		D	C		D	C	C	A	A	D	A	A
Approach Delay (s)		33.0			32.7			7.2			8.8	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay			10.2				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			72.3				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

												
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	328	1	0	2	282	968	4	6	1143	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	357	1	0	2	307	1052	4	7	1242	171
RTOR Reduction (vph)	0	0	216	0	2	0	0	0	0	0	0	96
Lane Group Flow (vph)	101	101	141	0	1	0	307	1056	0	7	1242	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)	7.1	7.1	24.7		0.8		11.6	39.5		0.8	28.7	28.7
Effective Green, g (s)	9.1	9.1	24.7		2.8		11.6	41.5		0.8	30.7	30.7
Actuated g/C Ratio	0.13	0.13	0.35		0.04		0.17	0.59		0.01	0.44	0.44
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)	218	218	981		66		567	2091		20	1548	692
v/s Ratio Prot	c0.06	0.06			c0.00		c0.09	0.30		0.00	c0.35	
v/s Ratio Perm			0.13									0.11
v/c Ratio	0.46	0.46	0.14		0.02		0.54	0.50		0.35	0.80	0.11
Uniform Delay, d1	28.3	28.3	15.5		32.4		26.9	8.4		34.4	17.1	11.7
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		0.6	0.3		3.8	3.5	0.1
Delay (s)	29.8	29.8	15.6		32.5		27.4	8.7		38.3	20.6	11.8
Level of Service	C	C	B		C		C	A		D	C	B
Approach Delay (s)		20.7			32.5			12.9			19.6	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			17.1				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			70.2				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			61.7%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												















HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

4/27/2014

	→	↘	↙	←	↖	↗
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)	288	389	129	292	299	141
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	423	140	317	325	153
RTOR Reduction (vph)	0	243	0	0	0	0
Lane Group Flow (vph)	313	180	140	317	325	153
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	18.8	18.8	6.6	29.4	7.2	47.6
Effective Green, g (s)	20.3	20.3	6.6	30.9	8.7	47.6
Actuated g/C Ratio	0.43	0.43	0.14	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)	795	675	245	2297	627	1583
v/s Ratio Prot	0.17		c0.08	0.09	c0.09	
v/s Ratio Perm		0.27				0.10
v/c Ratio	0.39	0.27	0.57	0.14	0.52	0.10
Uniform Delay, d1	9.4	8.8	19.2	3.2	17.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.4	2.0	0.1	0.3	0.0
Delay (s)	10.1	9.3	21.2	3.3	17.9	0.0
Level of Service	B	A	C	A	B	A
Approach Delay (s)	9.6			8.8	12.1	
Approach LOS	A			A	B	
Intersection Summary						
HCM Average Control Delay			10.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			47.6		Sum of lost time (s)	12.0
Intersection Capacity Utilization			40.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

						
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	0.18	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	342	3539	3539	1583
Volume (vph)	74	170	129	1024	1166	117
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	185	140	1113	1267	127
RTOR Reduction (vph)	0	62	0	0	0	39
Lane Group Flow (vph)	80	123	140	1113	1267	88
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	9.6	9.6	39.1	39.1	39.1	39.1
Effective Green, g (s)	9.6	9.6	39.1	39.1	39.1	39.1
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)	300	268	236	2440	2440	1092
v/s Ratio Prot	0.05			0.31	0.36	
v/s Ratio Perm		0.12	c0.41			0.08
v/c Ratio	0.27	0.46	0.59	0.46	0.52	0.08
Uniform Delay, d1	20.5	21.2	4.6	4.0	4.3	2.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	1.2	4.0	0.1	0.2	0.0
Delay (s)	21.0	22.4	8.6	4.1	4.4	2.9
Level of Service	C	C	A	A	A	A
Approach Delay (s)	22.0			4.6	4.3	
Approach LOS	C			A	A	
Intersection Summary						
HCM Average Control Delay			6.1		HCM Level of Service	A
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			56.7		Sum of lost time (s)	8.0
Intersection Capacity Utilization			53.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						























HCM Signalized Intersection Capacity Analysis
6: KAONOULU STREET & SOUTH KIHEI ROAD

4/27/2014

						
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	0.40	1.00
Satd. Flow (perm)	1770	1583	1863	1583	752	1863
Volume (vph)	112	28	536	127	48	455
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	30	583	138	52	495
RTOR Reduction (vph)	0	26	0	39	0	0
Lane Group Flow (vph)	122	4	583	99	52	495
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.1	8.1	40.3	40.3	40.3	40.3
Effective Green, g (s)	8.1	8.1	40.3	40.3	40.3	40.3
Actuated g/C Ratio	0.14	0.14	0.71	0.71	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)	254	227	1331	1131	537	1331
v/s Ratio Prot	c0.07		c0.31			0.27
v/s Ratio Perm		0.02		0.09	0.07	
v/c Ratio	0.48	0.02	0.44	0.09	0.10	0.37
Uniform Delay, d1	22.2	20.7	3.3	2.5	2.5	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.0	0.2	0.0	0.1	0.2
Delay (s)	23.6	20.8	3.6	2.5	2.5	3.3
Level of Service	C	C	A	A	A	A
Approach Delay (s)	23.1		3.4			3.2
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			5.4		HCM Level of Service	A
HCM Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			56.4		Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

												
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	1206	0	0	1165	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	1311	0	0	1266	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	1311	0	0	1266	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)		7.9	7.9				2.0	51.6			45.6	45.6
Effective Green, g (s)		7.9	7.9				2.0	51.6			45.6	45.6
Actuated g/C Ratio		0.12	0.12				0.03	0.76			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)		165	185				52	2705			2391	1069
v/s Ratio Prot							0.02	c0.37			c0.36	
v/s Ratio Perm		0.03	0.06									0.05
v/c Ratio		0.29	0.06				0.73	0.48			0.53	0.05
Uniform Delay, d1		27.2	26.5				32.5	3.0			5.5	3.7
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		1.0	0.1				40.9	0.1			0.2	0.0
Delay (s)		28.2	26.6				73.4	3.1			5.7	3.7
Level of Service		C	C				E	A			A	A
Approach Delay (s)		27.2			0.0			5.1			5.6	
Approach LOS		C			A			A			A	
Intersection Summary												
HCM Average Control Delay			6.4				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			67.5				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			43.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
8: PIIKEA AVENUE & PIILANI HIGHWAY

4/27/2014

						
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)	310	255	214	1033	1016	375
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	277	233	1123	1104	408
RTOR Reduction (vph)	0	210	0	0	0	250
Lane Group Flow (vph)	337	67	233	1123	1104	158
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	14.5	14.5	10.2	37.5	23.3	23.3
Effective Green, g (s)	14.5	14.5	10.2	37.5	23.3	23.3
Actuated g/C Ratio	0.24	0.24	0.17	0.62	0.39	0.39
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)	428	383	301	2212	1374	615
v/s Ratio Prot	c0.19		c0.13	0.32	c0.31	
v/s Ratio Perm		0.17				0.26
v/c Ratio	0.79	0.17	0.77	0.51	0.80	0.26
Uniform Delay, d1	21.3	18.0	23.8	6.2	16.3	12.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.3	0.2	11.7	0.8	5.1	1.0
Delay (s)	30.6	18.2	35.5	7.0	21.4	13.5
Level of Service	C	B	D	A	C	B
Approach Delay (s)	25.0			11.9	19.3	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay			17.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			67.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/27/2014

	→	↘	←	↙	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖↖	↖	↖	↖↖	↖
Volume (vph)	45	137	62	37	38	1007	102	95	1089	105
Lane Group Flow (vph)	241	149	140	40	41	1095	111	103	1184	114
Turn Type		Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases	8		7		5	2		1	6	
Permitted Phases		8		7			2			6
Detector Phases	8	8	7	7	5	2	2	1	6	6
Minimum Initial (s)	10.0	10.0	5.0	5.0	5.0	20.0	20.0	8.0	20.0	20.0
Minimum Split (s)	15.0	15.0	10.0	10.0	10.0	25.0	25.0	13.0	25.0	25.0
Total Split (s)	16.0	16.0	11.0	11.0	10.0	30.0	30.0	13.0	33.0	33.0
Total Split (%)	22.9%	22.9%	15.7%	15.7%	14.3%	42.9%	42.9%	18.6%	47.1%	47.1%
Yellow Time (s)	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
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio	0.75	0.37	0.75	0.20	0.27	0.73	0.15	0.45	0.69	0.14
Control Delay	43.0	8.1	57.7	13.3	35.2	22.2	4.1	34.9	18.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	8.1	57.7	13.3	35.2	22.2	4.1	34.9	18.0	3.5
Queue Length 50th (ft)	101	0	60	0	17	220	0	42	227	0
Queue Length 95th (ft)	#210	45	#148	26	45	#306	29	87	307	27
Internal Link Dist (ft)	459		456			2865			2675	
Turn Bay Length (ft)										
Base Capacity (vph)	327	411	186	198	152	1500	735	231	1723	829
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	0.74	0.36	0.75	0.20	0.27	0.73	0.15	0.45	0.69	0.14

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 66.4

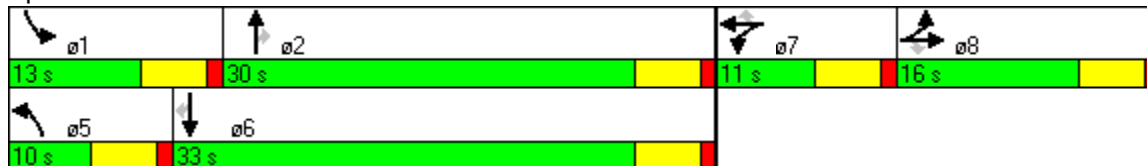
Natural Cycle: 70

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

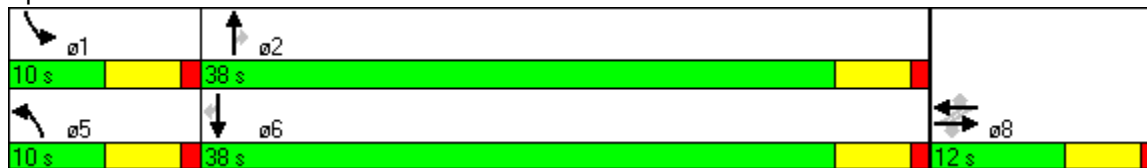
4/27/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	13	56	42	39	51	25	1137	60	68	1381	49
Lane Group Flow (vph)	0	79	61	0	88	55	27	1236	65	74	1501	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	38.0	38.0	10.0	38.0	38.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	16.7%	63.3%	63.3%	16.7%	63.3%	63.3%
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		0.49	0.24		0.48	0.23	0.18	0.52	0.06	0.47	0.60	0.05
Control Delay		34.1	10.2		32.6	10.4	28.5	7.7	2.0	35.3	7.8	2.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		34.1	10.2		32.6	10.4	28.5	7.7	2.0	35.3	7.8	2.2
Queue Length 50th (ft)		27	0		30	0	9	138	0	26	95	0
Queue Length 95th (ft)		64	28		68	27	29	193	13	61	266	11
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)		163	250		184	245	153	2392	1091	158	2510	1138
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		0.48	0.24		0.48	0.22	0.18	0.52	0.06	0.47	0.60	0.05

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 70
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	186	0	328	0	282	968	6	1143	157
Lane Group Flow (vph)	101	101	357	3	307	1056	7	1242	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	47.0	9.0	30.0	30.0
Total Split (%)	16.3%	16.3%	48.8%	13.8%	32.5%	58.8%	11.3%	37.5%	37.5%
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	0.41	0.41	0.27	0.02	0.48	0.45	0.05	0.80	0.22
Control Delay	32.0	32.0	2.9	25.7	24.1	6.7	33.5	21.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	32.0	2.9	25.7	24.1	6.7	33.5	21.1	3.4
Queue Length 50th (ft)	32	32	2	0	49	60	2	175	0
Queue Length 95th (ft)	#103	#103	32	8	106	225	16	#431	36
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	248	248	1531	168	1053	2407	129	1559	793
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	0.41	0.41	0.23	0.02	0.29	0.44	0.05	0.80	0.22

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 61.9

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: 3: NORTH KIHEI ROAD & PIILANI HIGHWAY



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

4/27/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↗↙	↗
Volume (vph)	288	389	129	292	299	141
Lane Group Flow (vph)	313	423	140	317	325	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)	31.5	31.5	11.0	42.5	12.5	55.0
Total Split (%)	57.3%	57.3%	20.0%	77.3%	22.7%	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	0.40	0.46	0.58	0.14	0.52	0.10
Control Delay	10.2	2.5	31.6	3.1	23.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	2.5	31.6	3.1	23.0	0.1
Queue Length 50th (ft)	56	0	38	13	44	0
Queue Length 95th (ft)	100	35	#110	22	86	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	940	1008	261	2477	624	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	0.33	0.42	0.54	0.13	0.52	0.10

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 47.8

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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

4/27/2014

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	74	170	129	1024	1166	117
Lane Group Flow (vph)	80	185	140	1113	1267	127
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phases	4	4	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	45.0	45.0	45.0	45.0
Total Split (%)	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%
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 Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
v/c Ratio	0.27	0.56	0.66	0.46	0.52	0.11
Control Delay	20.4	15.3	25.7	5.2	5.7	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	15.3	25.7	5.2	5.7	1.2
Queue Length 50th (ft)	21	30	20	65	79	0
Queue Length 95th (ft)	57	87	#133	141	171	14
Internal Link Dist (ft)	253			2017	2865	
Turn Bay Length (ft)						
Base Capacity (vph)	455	463	218	2516	2516	1162
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	0.18	0.40	0.64	0.44	0.50	0.11

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 57

Natural Cycle: 65

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

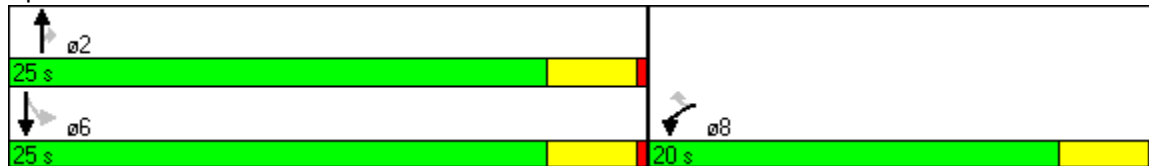


	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	112	28	536	127	48	455
Lane Group Flow (vph)	122	30	583	138	52	495
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	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	25.0	25.0	25.0	25.0
Total Split (%)	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
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	0.39	0.10	0.43	0.12	0.13	0.36
Control Delay	12.2	5.7	5.7	1.4	5.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	5.7	5.7	1.4	5.5	5.1
Queue Length 50th (ft)	22	0	59	0	4	47
Queue Length 95th (ft)	50	12	144	15	18	113
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	498	467	1366	1198	391	1366
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	0.24	0.06	0.43	0.12	0.13	0.36

Intersection Summary

Cycle Length: 45
 Actuated Cycle Length: 56.7
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated














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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

4/27/2014

								ø1	ø8
Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR		
Lane Configurations									
Volume (vph)	44	0	81	35	1206	1165	66		
Lane Group Flow (vph)	0	48	88	38	1311	1266	72		
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	32.0	32.0	32.0	8.0	20.0
Total Split (%)	33.3%	33.3%	33.3%	13.3%	53.3%	53.3%	53.3%	13%	33%
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		0.27	0.32	0.34	0.49	0.51	0.06		
Control Delay		19.0	6.6	30.8	4.2	6.9	2.2		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		19.0	6.6	30.8	4.2	6.9	2.2		
Queue Length 50th (ft)		10	0	9	67	63	0		
Queue Length 95th (ft)		37	30	35	128	204	14		
Internal Link Dist (ft)		212			1953	2017			
Turn Bay Length (ft)									
Base Capacity (vph)		332	441	113	2680	2467	1125		
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		0.14	0.20	0.34	0.49	0.51	0.06		

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 66.2
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated















Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

4/27/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Volume (vph)	310	255	214	1033	1016	375
Lane Group Flow (vph)	337	277	233	1123	1104	408
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)	20.0	20.0	14.0	40.0	26.0	26.0
Total Split (%)	33.3%	33.3%	23.3%	66.7%	43.3%	43.3%
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	0.79	0.47	0.77	0.51	0.80	0.47
Control Delay	31.1	5.3	42.9	7.5	23.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	5.3	42.9	7.5	23.1	3.8
Queue Length 50th (ft)	110	0	82	108	187	0
Queue Length 95th (ft)	#216	48	#184	151	#297	48
Internal Link Dist (ft)	620			1070	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	472	625	307	2210	1373	864
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	0.71	0.44	0.76	0.51	0.80	0.47

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

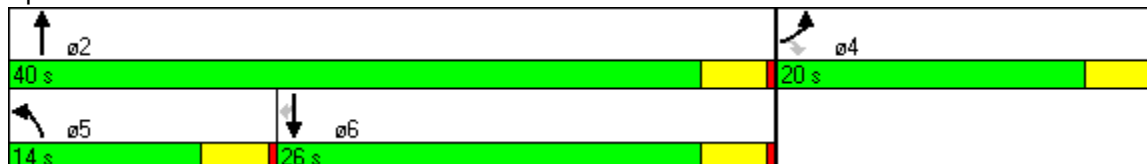
Natural Cycle: 60

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






















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

4/27/2014

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	132	11	25	134	52	9	9	28	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	171	22	62	268	80	36	18	72	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	348			193			696	743	182	772	714	308
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348			193			696	743	182	772	714	308
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			89	94	92	60	97	96
cM capacity (veh/h)	1211			1380			314	316	860	261	328	732
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	44	193	62	348	36	90	104	38				
Volume Left	44	0	62	0	36	0	104	0				
Volume Right	0	22	0	80	0	72	0	28				
cSH	1211	1700	1380	1700	314	639	261	553				
Volume to Capacity	0.04	0.11	0.05	0.20	0.11	0.14	0.40	0.07				
Queue Length 95th (ft)	3	0	4	0	10	12	45	5				
Control Delay (s)	8.1	0.0	7.7	0.0	17.9	11.5	27.7	12.0				
Lane LOS	A		A		C	B	D	B				
Approach Delay (s)	1.5		1.2		13.4		23.5					
Approach LOS					B		C					
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			35.0%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

4/27/2014

												
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)	70	169	10	6	158	8	5	4	7	7	3	90
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)	76	184	11	7	172	9	5	4	8	8	3	98
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	180			195			626	535	189	535	536	176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	180			195			626	535	189	535	536	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 %	95			100			98	99	99	98	99	89
cM capacity (veh/h)	1395			1379			334	425	853	428	424	867
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	76	195	7	180	17	109						
Volume Left	76	0	7	0	5	8						
Volume Right	0	11	0	9	8	98						
cSH	1395	1700	1379	1700	491	786						
Volume to Capacity	0.05	0.11	0.00	0.11	0.04	0.14						
Queue Length 95th (ft)	4	0	0	0	3	12						
Control Delay (s)	7.7	0.0	7.6	0.0	12.6	10.3						
Lane LOS	A		A		B	B						
Approach Delay (s)	2.2		0.3		12.6	10.3						
Approach LOS					B	B						
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			29.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Appendix D
Level-of-Service Worksheets for 2018 Background Conditions
With Mitigation

























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1681	1710	1583	1770	3539	1583	3433	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)	1681	1770	1583	1681	1710	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	93	88	79	211	40	177	25	1110	40	167	1494	77
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)	101	96	86	229	43	192	27	1207	43	182	1624	84
RTOR Reduction (vph)	0	0	75	0	0	167	0	0	19	0	0	25
Lane Group Flow (vph)	101	96	11	132	140	25	27	1207	24	182	1624	59
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)	15.4	15.4	15.4	15.3	15.3	15.3	6.0	61.0	61.0	13.3	68.3	68.3
Effective Green, g (s)	16.4	16.4	16.4	16.3	16.3	16.3	7.0	62.0	62.0	14.3	69.3	69.3
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.50	0.50	0.11	0.55	0.55
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)	221	232	208	219	223	206	99	1755	785	393	1962	878
v/s Ratio Prot	c0.06	0.05		0.08	0.08		0.02	0.34		c0.05	c0.46	
v/s Ratio Perm			0.05			0.12			0.03			0.05
v/c Ratio	0.46	0.41	0.05	0.60	0.63	0.12	0.27	0.69	0.03	0.46	0.83	0.07
Uniform Delay, d1	50.2	49.9	47.5	51.3	51.5	48.0	56.6	24.1	16.1	51.8	22.9	12.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.31	0.50	0.13	1.25	0.67	0.18
Incremental Delay, d2	1.5	1.2	0.1	4.6	5.4	0.3	0.5	2.1	0.1	0.3	3.8	0.1
Delay (s)	51.7	51.1	47.6	55.9	56.9	48.3	74.8	14.1	2.2	65.0	19.1	2.4
Level of Service	D	D	D	E	E	D	E	B	A	E	B	A
Approach Delay (s)		50.2			53.1			15.0			22.8	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM Average Control Delay			25.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			125.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			73.2%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

												
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	0.74	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1374	1863	1583	1389	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	138	17	106	70	28	106	17	1333	55	34	1324	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	18	115	76	30	115	18	1449	60	37	1439	23
RTOR Reduction (vph)	0	0	96	0	0	96	0	0	19	0	0	7
Lane Group Flow (vph)	150	18	19	76	30	19	18	1449	41	37	1439	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)	19.6	19.6	19.6	19.6	19.6	19.6	4.0	84.4	84.4	6.0	86.4	86.4
Effective Green, g (s)	20.6	20.6	20.6	20.6	20.6	20.6	5.0	85.4	85.4	7.0	87.4	87.4
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.04	0.68	0.68	0.06	0.70	0.70
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)	226	307	261	229	307	261	71	2418	1082	99	2474	1107
v/s Ratio Prot		0.01			0.02		0.01	c0.41		c0.02	0.41	
v/s Ratio Perm	c0.11		0.07	0.05		0.07			0.04			0.01
v/c Ratio	0.66	0.06	0.07	0.33	0.10	0.07	0.25	0.60	0.04	0.37	0.58	0.01
Uniform Delay, d1	49.0	44.0	44.1	46.1	44.3	44.1	58.2	10.6	6.4	56.9	9.5	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.64	1.77	4.13	0.77	2.04	2.32
Incremental Delay, d2	7.8	0.1	0.2	1.2	0.2	0.2	0.5	0.9	0.1	0.7	0.8	0.0
Delay (s)	56.8	44.1	44.3	47.3	44.5	44.3	38.0	19.7	26.7	44.4	20.3	13.3
Level of Service	E	D	D	D	D	D	D	B	C	D	C	B
Approach Delay (s)		50.9			45.3			20.2			20.8	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			24.5				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			63.5%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	88	79	211	40	177	25	1110	40	167	1494	77
Lane Group Flow (vph)	101	96	86	132	140	192	27	1207	43	182	1624	84
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)	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 (%)	17.6%	17.6%	17.6%	20.0%	20.0%	20.0%	14.4%	46.4%	46.4%	16.0%	48.0%	48.0%
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	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	0.46	0.41	0.30	0.60	0.62	0.51	0.17	0.69	0.05	0.46	0.80	0.09
Control Delay	55.9	54.5	12.4	56.1	56.6	9.9	71.4	14.7	1.0	67.6	19.9	1.4
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	55.9	54.5	12.4	56.1	56.6	9.9	71.4	14.7	1.0	67.6	19.9	1.4
Queue Length 50th (ft)	81	76	0	107	114	0	19	433	1	67	714	5
Queue Length 95th (ft)	141	133	48	171	181	66	56	105	1	118	#818	4
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	242	255	302	282	287	426	198	1755	804	439	2018	927
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	0.42	0.38	0.28	0.47	0.49	0.45	0.14	0.69	0.05	0.41	0.80	0.09

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

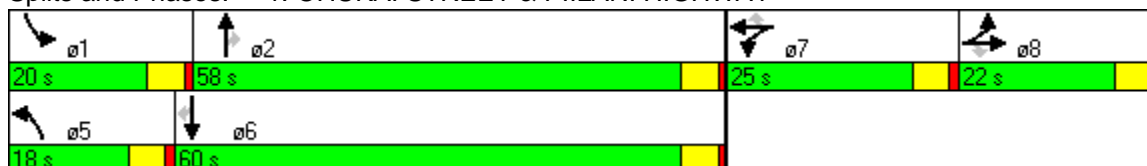
Natural Cycle: 125

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	17	106	70	28	106	17	1333	55	34	1324	21
Lane Group Flow (vph)	150	18	115	76	30	115	18	1449	60	37	1439	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	0.66	0.06	0.32	0.33	0.10	0.32	0.12	0.59	0.05	0.24	0.56	0.02
Control Delay	54.8	41.4	9.0	46.8	42.2	9.0	35.4	21.8	10.2	44.2	21.7	8.5
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	54.8	41.4	9.0	46.8	42.2	9.0	35.4	21.8	10.2	44.2	21.7	8.5
Queue Length 50th (ft)	114	12	0	55	21	0	14	343	7	23	557	4
Queue Length 95th (ft)	180	33	50	99	47	50	m22	588	m35	m44	714	m15
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	286	388	420	289	388	420	156	2475	1125	156	2560	1151
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	0.05	0.27	0.26	0.08	0.27	0.12	0.59	0.05	0.24	0.56	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



























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1750	1583	1681	1724	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1750	1583	1681	1724	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	115	76	81	204	66	168	104	1486	56	138	1398	84
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)	125	83	88	222	72	183	113	1615	61	150	1520	91
RTOR Reduction (vph)	0	0	79	0	0	137	0	0	17	0	0	26
Lane Group Flow (vph)	101	107	9	143	151	46	113	1615	44	150	1520	65
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)	13.5	13.5	13.5	17.4	17.4	17.4	12.9	89.6	89.6	9.5	86.2	86.2
Effective Green, g (s)	14.5	14.5	14.5	18.4	18.4	18.4	13.9	90.6	90.6	10.5	87.2	87.2
Actuated g/C Ratio	0.10	0.10	0.10	0.12	0.12	0.12	0.09	0.60	0.60	0.07	0.58	0.58
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)	162	169	153	206	211	194	164	2138	956	240	2057	920
v/s Ratio Prot	0.06	c0.06		0.09	0.09		c0.06	c0.46		0.04	0.43	
v/s Ratio Perm			0.06			0.12			0.04			0.06
v/c Ratio	0.62	0.63	0.06	0.69	0.72	0.24	0.69	0.76	0.05	0.62	0.74	0.07
Uniform Delay, d1	65.1	65.2	61.5	63.1	63.3	59.5	66.0	21.6	12.1	67.8	23.0	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.18	0.54	0.18	0.74	1.38	2.59
Incremental Delay, d2	7.6	7.9	0.2	9.7	11.0	0.6	7.9	2.2	0.1	3.0	2.0	0.1
Delay (s)	72.7	73.1	61.7	72.8	74.2	60.1	85.4	13.9	2.3	53.4	33.8	35.6
Level of Service	E	E	E	E	E	E	F	B	A	D	C	D
Approach Delay (s)		69.6			68.4			18.1			35.5	
Approach LOS		E			E			B			D	
Intersection Summary												
HCM Average Control Delay			34.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			71.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

												
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	0.73	1.00	1.00	0.74	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1354	1863	1583	1385	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	78	19	79	33	42	67	48	1544	108	100	1487	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	21	86	36	46	73	52	1678	117	109	1616	70
RTOR Reduction (vph)	0	0	78	0	0	66	0	0	23	0	0	14
Lane Group Flow (vph)	85	21	8	36	46	7	52	1678	94	109	1616	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)	14.5	14.5	14.5	14.5	14.5	14.5	8.3	107.9	107.9	13.6	113.2	113.2
Effective Green, g (s)	14.5	14.5	14.5	14.5	14.5	14.5	9.3	108.9	108.9	14.6	114.2	114.2
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.10	0.06	0.73	0.73	0.10	0.76	0.76
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)	131	180	153	134	180	153	110	2569	1149	172	2694	1205
v/s Ratio Prot		0.01			0.02		0.03	c0.47		c0.06	0.46	
v/s Ratio Perm	c0.06		0.05	0.03		0.05			0.07			0.04
v/c Ratio	0.65	0.12	0.05	0.27	0.26	0.05	0.47	0.65	0.08	0.63	0.60	0.05
Uniform Delay, d1	65.3	61.9	61.5	62.8	62.8	61.5	68.0	10.7	6.0	65.1	7.9	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	1.62	1.68	1.19	1.47	1.12
Incremental Delay, d2	10.6	0.3	0.1	1.1	0.8	0.1	2.2	0.9	0.1	5.8	0.8	0.1
Delay (s)	75.9	62.2	61.7	63.9	63.5	61.6	79.2	18.2	10.2	83.5	12.3	5.0
Level of Service	E	E	E	E	E	E	E	B	B	F	B	A
Approach Delay (s)		68.0			62.7			19.4			16.3	
Approach LOS		E			E			B			B	
Intersection Summary												
HCM Average Control Delay			22.1				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			69.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	76	81	204	66	168	104	1486	56	138	1398	84
Lane Group Flow (vph)	101	107	88	143	151	183	113	1615	61	150	1520	91
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)	20.0	20.0	20.0	26.0	26.0	26.0	21.0	89.0	89.0	15.0	83.0	83.0
Total Split (%)	13.3%	13.3%	13.3%	17.3%	17.3%	17.3%	14.0%	59.3%	59.3%	10.0%	55.3%	55.3%
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	0.62	0.63	0.38	0.69	0.71	0.55	0.69	0.76	0.06	0.62	0.74	0.10
Control Delay	77.4	77.4	15.7	72.2	72.8	17.7	86.4	14.7	1.1	58.8	36.4	16.9
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	77.4	77.4	15.7	72.2	72.8	17.7	86.4	14.7	1.1	58.8	36.4	16.9
Queue Length 50th (ft)	101	106	0	143	151	24	106	484	3	74	473	23
Queue Length 95th (ft)	170	177	55	220	230	101	168	590	m1	109	813	99
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	179	187	247	247	253	365	201	2136	973	252	2057	947
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	0.56	0.57	0.36	0.58	0.60	0.50	0.56	0.76	0.06	0.60	0.74	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: OHUKAI STREET & PIILANI HIGHWAY



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	19	79	33	42	67	48	1544	108	100	1487	64
Lane Group Flow (vph)	85	21	86	36	46	73	52	1678	117	109	1616	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)	32.0	32.0	32.0	32.0	32.0	32.0	19.0	92.0	92.0	26.0	99.0	99.0
Total Split (%)	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	12.7%	61.3%	61.3%	17.3%	66.0%	66.0%
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	0.65	0.12	0.37	0.27	0.25	0.33	0.42	0.65	0.10	0.63	0.59	0.06
Control Delay	67.7	59.5	12.6	61.8	61.5	13.3	77.6	20.8	4.9	80.5	14.1	2.5
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	67.7	59.5	12.6	61.8	61.5	13.3	77.6	20.8	4.9	80.5	14.1	2.5
Queue Length 50th (ft)	82	19	0	33	43	0	45	795	19	96	694	4
Queue Length 95th (ft)	136	46	52	68	81	49	m63	915	m55	m125	864	m23
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	253	348	365	259	348	355	177	2569	1172	260	2716	1228
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	0.34	0.06	0.24	0.14	0.13	0.21	0.29	0.65	0.10	0.42	0.59	0.06

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1770	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1770	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	177	45	137	67	62	37	38	1007	102	95	1089	105
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)	192	49	149	73	67	40	41	1095	111	103	1184	114
RTOR Reduction (vph)	0	0	131	0	0	37	0	0	54	0	0	50
Lane Group Flow (vph)	117	124	18	73	67	3	41	1095	57	103	1184	64
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)	9.1	9.1	9.1	4.6	4.6	4.6	3.4	41.1	41.1	7.3	45.0	45.0
Effective Green, g (s)	10.1	10.1	10.1	5.6	5.6	5.6	4.4	42.1	42.1	8.3	46.0	46.0
Actuated g/C Ratio	0.12	0.12	0.12	0.07	0.07	0.07	0.05	0.51	0.51	0.10	0.56	0.56
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)	207	211	195	115	121	108	95	1815	812	347	1983	887
v/s Ratio Prot	0.07	0.07		c0.04	0.04		c0.02	0.31		0.03	c0.33	
v/s Ratio Perm			0.09			0.03			0.07			0.07
v/c Ratio	0.57	0.59	0.09	0.63	0.55	0.03	0.43	0.60	0.07	0.30	0.60	0.07
Uniform Delay, d1	33.9	34.0	31.9	37.3	37.0	35.7	37.6	14.1	10.1	34.2	11.9	8.3
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	3.8	4.4	0.2	10.9	5.4	0.1	1.1	0.8	0.1	0.2	0.7	0.1
Delay (s)	37.7	38.4	32.2	48.2	42.4	35.8	38.8	14.9	10.2	34.4	12.7	8.3
Level of Service	D	D	C	D	D	D	D	B	B	C	B	A
Approach Delay (s)		35.8			43.3			15.3			13.9	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			18.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			82.1			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			57.3%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

												
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	0.73	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1359	1863	1583	1394	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	60	13	56	42	39	51	25	1137	60	68	1381	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	14	61	46	42	55	27	1236	65	74	1501	53
RTOR Reduction (vph)	0	0	54	0	0	49	0	0	22	0	0	17
Lane Group Flow (vph)	65	14	7	46	42	6	27	1236	43	74	1501	36
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)	6.9	6.9	6.9	6.9	6.9	6.9	2.3	46.9	46.9	3.5	48.1	48.1
Effective Green, g (s)	7.9	7.9	7.9	7.9	7.9	7.9	3.3	47.9	47.9	4.5	49.1	49.1
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.11	0.11	0.05	0.66	0.66	0.06	0.68	0.68
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)	148	204	173	152	204	173	81	2345	1049	110	2403	1075
v/s Ratio Prot		0.01			0.02		0.02	0.35		c0.04	c0.42	
v/s Ratio Perm	c0.05		0.04	0.03		0.03			0.04			0.03
v/c Ratio	0.44	0.07	0.04	0.30	0.21	0.03	0.33	0.53	0.04	0.67	0.62	0.03
Uniform Delay, d1	30.1	28.9	28.8	29.7	29.3	28.8	33.4	6.3	4.2	33.2	6.5	3.8
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	2.8	0.2	0.1	1.5	0.7	0.1	0.9	0.4	0.0	12.0	0.7	0.0
Delay (s)	33.0	29.1	28.9	31.2	30.0	28.9	34.3	6.7	4.3	45.2	7.2	3.8
Level of Service	C	C	C	C	C	C	C	A	A	D	A	A
Approach Delay (s)		30.8			30.0			7.2			8.8	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay			10.0				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			72.3				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			62.3%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	45	137	67	62	37	38	1007	102	95	1089	105
Lane Group Flow (vph)	117	124	149	73	67	40	41	1095	111	103	1184	114
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)	15.0	15.0	15.0	10.0	10.0	10.0	10.0	32.0	32.0	13.0	35.0	35.0
Total Split (%)	21.4%	21.4%	21.4%	14.3%	14.3%	14.3%	14.3%	45.7%	45.7%	18.6%	50.0%	50.0%
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	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	0.49	0.51	0.42	0.56	0.49	0.25	0.31	0.59	0.13	0.26	0.57	0.12
Control Delay	33.3	33.7	9.1	47.2	42.1	15.1	36.7	17.5	3.5	28.2	14.4	2.9
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	33.3	33.7	9.1	47.2	42.1	15.1	36.7	17.5	3.5	28.2	14.4	2.9
Queue Length 50th (ft)	48	51	0	32	29	0	17	208	0	21	214	0
Queue Length 95th (ft)	98	103	46	#82	68	27	45	283	27	41	290	25
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	239	244	352	131	138	160	134	1841	877	399	2063	970
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	0.51	0.42	0.56	0.49	0.25	0.31	0.59	0.13	0.26	0.57	0.12

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 80

Natural Cycle: 65

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

4/29/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	13	56	42	39	51	25	1137	60	68	1381	49
Lane Group Flow (vph)	65	14	61	46	42	55	27	1236	65	74	1501	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	38.0	38.0	10.0	38.0	38.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	16.7%	63.3%	63.3%	16.7%	63.3%	63.3%
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	0.39	0.06	0.24	0.27	0.18	0.23	0.18	0.52	0.06	0.47	0.60	0.05
Control Delay	30.4	23.5	10.2	27.3	24.9	10.4	28.5	7.7	2.0	35.3	7.8	2.2
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	30.4	23.5	10.2	27.3	24.9	10.4	28.5	7.7	2.0	35.3	7.8	2.2
Queue Length 50th (ft)	22	5	0	15	14	0	9	138	0	26	95	0
Queue Length 95th (ft)	54	18	28	42	38	27	29	193	13	61	266	11
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	169	231	250	173	231	245	153	2392	1091	158	2510	1138
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	0.38	0.06	0.24	0.27	0.18	0.22	0.18	0.52	0.06	0.47	0.60	0.05

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 70
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated

























Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Appendix E
Level-of-Service Worksheets for With Promenade Without Honuaula
Conditions

























HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1681	1709	1583	1770	3539	1583	3433	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)	1681	1770	1583	1681	1709	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	93	88	95	227	40	177	38	1188	53	167	1589	77
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)	101	96	103	247	43	192	41	1291	58	182	1727	84
RTOR Reduction (vph)	0	0	89	0	0	166	0	0	24	0	0	25
Lane Group Flow (vph)	101	96	14	141	149	26	41	1291	34	182	1727	59
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)	15.4	15.4	15.4	15.7	15.7	15.7	8.1	60.6	60.6	13.3	65.8	65.8
Effective Green, g (s)	16.4	16.4	16.4	16.7	16.7	16.7	9.1	61.6	61.6	14.3	66.8	66.8
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.07	0.49	0.49	0.11	0.53	0.53
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)	221	232	208	225	228	211	129	1744	780	393	1891	846
v/s Ratio Prot	0.06	0.05		0.08	0.09		0.02	0.36		c0.05	c0.49	
v/s Ratio Perm			0.07			0.12			0.04			0.05
v/c Ratio	0.46	0.41	0.06	0.63	0.65	0.12	0.32	0.74	0.04	0.46	0.91	0.07
Uniform Delay, d1	50.2	49.9	47.6	51.2	51.4	47.7	55.0	25.3	16.4	51.8	26.5	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.06	0.60	1.07	1.28	0.65	0.25
Incremental Delay, d2	1.5	1.2	0.1	5.4	6.6	0.3	0.5	2.6	0.1	0.3	7.4	0.1
Delay (s)	51.7	51.1	47.7	56.6	58.0	47.9	58.7	17.9	17.6	66.5	24.6	3.7
Level of Service	D	D	D	E	E	D	E	B	B	E	C	A
Approach Delay (s)		50.1			53.6			19.1			27.5	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM Average Control Delay			29.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			125.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			76.3%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

												
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	0.74	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1374	1863	1583	1389	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	138	17	122	86	28	106	30	1384	68	34	1387	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	18	133	93	30	115	33	1504	74	37	1508	23
RTOR Reduction (vph)	0	0	111	0	0	96	0	0	23	0	0	7
Lane Group Flow (vph)	150	18	22	93	30	19	33	1504	51	37	1508	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)	19.6	19.6	19.6	19.6	19.6	19.6	6.0	84.4	84.4	6.0	84.4	84.4
Effective Green, g (s)	20.6	20.6	20.6	20.6	20.6	20.6	7.0	85.4	85.4	7.0	85.4	85.4
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.68	0.68	0.06	0.68	0.68
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)	226	307	261	229	307	261	99	2418	1082	99	2418	1082
v/s Ratio Prot		0.01			0.02		0.02	0.42		c0.02	c0.43	
v/s Ratio Perm	c0.11		0.08	0.07		0.07			0.05			0.01
v/c Ratio	0.66	0.06	0.08	0.41	0.10	0.07	0.33	0.62	0.05	0.37	0.62	0.01
Uniform Delay, d1	49.0	44.0	44.2	46.7	44.3	44.1	56.8	10.9	6.5	56.9	10.9	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.57	1.93	4.18	0.78	1.98	2.58
Incremental Delay, d2	7.8	0.1	0.2	1.6	0.2	0.2	0.5	0.9	0.1	0.7	1.0	0.0
Delay (s)	56.8	44.1	44.4	48.3	44.5	44.3	32.8	21.9	27.1	44.9	22.6	16.4
Level of Service	E	D	D	D	D	D	C	C	C	D	C	B
Approach Delay (s)		50.6			45.9			22.4			23.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.5				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			65.0%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

												
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	346	14	2	4	398	1220	8	3	1159	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	376	15	2	4	433	1326	9	3	1260	120
RTOR Reduction (vph)	0	0	122	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	122	129	254	0	17	0	433	1335	0	3	1260	69
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)	13.7	13.7	40.7		3.6		21.0	84.7		1.0	64.2	64.2
Effective Green, g (s)	15.7	15.7	41.2		5.6		21.5	86.7		1.0	66.2	66.2
Actuated g/C Ratio	0.13	0.13	0.33		0.04		0.17	0.69		0.01	0.53	0.53
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)	211	213	919		78		590	2453		14	1874	838
v/s Ratio Prot	0.07	c0.08			c0.01		c0.13	0.38		0.00	c0.36	
v/s Ratio Perm			0.13									0.08
v/c Ratio	0.58	0.61	0.28		0.22		0.73	0.54		0.21	0.67	0.08
Uniform Delay, d1	51.5	51.7	30.9		57.6		49.0	9.4		61.6	21.5	14.5
Progression Factor	1.08	1.08	1.77		1.00		0.83	1.87		1.00	1.00	1.00
Incremental Delay, d2	3.8	4.7	0.2		1.4		3.9	0.7		2.8	1.9	0.2
Delay (s)	59.4	60.5	54.8		59.0		44.7	18.3		64.4	23.4	14.7
Level of Service	E	E	D		E		D	B		E	C	B
Approach Delay (s)		56.8			59.0			24.8			22.8	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			29.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			125.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
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)	330	281	81	455	431	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	359	305	88	495	468	201
RTOR Reduction (vph)	0	109	0	0	0	0
Lane Group Flow (vph)	359	196	88	495	468	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	78.9	78.9	10.5	93.4	20.6	125.0
Effective Green, g (s)	80.4	80.4	10.5	94.9	22.1	125.0
Actuated g/C Ratio	0.64	0.64	0.08	0.76	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)	1198	1018	149	2687	607	1583
v/s Ratio Prot	c0.19		c0.05	0.14	c0.14	
v/s Ratio Perm		0.19				0.13
v/c Ratio	0.30	0.19	0.59	0.18	0.77	0.13
Uniform Delay, d1	9.9	9.1	55.2	4.2	49.0	0.0
Progression Factor	1.00	1.00	1.21	0.22	1.00	1.00
Incremental Delay, d2	0.6	0.4	3.6	0.1	5.5	0.0
Delay (s)	10.5	9.5	70.2	1.1	54.5	0.0
Level of Service	B	A	E	A	D	A
Approach Delay (s)	10.0			11.5	38.2	
Approach LOS	B			B	D	
Intersection Summary						
HCM Average Control Delay			20.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			44.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014













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)	50	73	236	152	75	152	111	1067	145	154	1560	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	79	257	165	82	165	121	1160	158	167	1696	74
RTOR Reduction (vph)	0	0	12	0	0	135	0	0	49	0	0	22
Lane Group Flow (vph)	54	79	245	165	82	30	121	1160	109	167	1696	52
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)	7.9	10.9	26.4	8.1	11.1	22.6	15.5	78.5	86.6	11.5	74.5	74.5
Effective Green, g (s)	7.9	10.9	26.4	8.1	11.1	22.6	15.5	78.5	86.6	11.5	74.5	74.5
Actuated g/C Ratio	0.06	0.09	0.21	0.06	0.09	0.18	0.12	0.63	0.69	0.09	0.60	0.60
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)	112	309	385	222	165	593	219	2222	2020	316	2109	943
v/s Ratio Prot	0.03	0.02	c0.08	c0.05	0.04	0.03	0.07	c0.33	0.01	0.05	c0.48	
v/s Ratio Perm			0.08			0.03			0.05			0.05
v/c Ratio	0.48	0.26	0.64	0.74	0.50	0.05	0.55	0.52	0.05	0.53	0.80	0.05
Uniform Delay, d1	56.6	53.3	44.9	57.4	54.3	42.3	51.5	12.9	6.1	54.2	19.6	10.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.70	2.03	5.97	0.75	1.24	2.39
Incremental Delay, d2	3.2	0.4	3.4	12.6	2.3	0.0	2.5	0.7	0.0	0.9	1.8	0.1
Delay (s)	59.8	53.7	48.4	70.0	56.6	42.4	38.7	26.9	36.6	41.5	26.1	25.2
Level of Service	E	D	D	E	E	D	D	C	D	D	C	C
Approach Delay (s)		51.0			56.3			28.9			27.4	
Approach LOS		D			E			C			C	

Intersection Summary

HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014

						
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	0.38	1.00
Satd. Flow (perm)	1770	1583	1863	1583	701	1863
Volume (vph)	117	60	558	117	59	374
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	65	607	127	64	407
RTOR Reduction (vph)	0	53	0	41	0	0
Lane Group Flow (vph)	127	12	607	86	64	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	9.9	9.9	38.0	38.0	38.0	38.0
Effective Green, g (s)	9.9	9.9	38.0	38.0	38.0	38.0
Actuated g/C Ratio	0.18	0.18	0.68	0.68	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)	313	280	1266	1076	477	1266
v/s Ratio Prot	c0.07		c0.33			0.22
v/s Ratio Perm		0.04		0.08	0.09	
v/c Ratio	0.41	0.04	0.48	0.08	0.13	0.32
Uniform Delay, d1	20.4	19.1	4.3	3.0	3.2	3.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	0.3	0.0	0.1	0.1
Delay (s)	21.3	19.1	4.5	3.1	3.3	3.8
Level of Service	C	B	A	A	A	A
Approach Delay (s)	20.5		4.3			3.7
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			6.3		HCM Level of Service	A
HCM Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			55.9		Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY















5/30/2014

												
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)		1815	1583		1779	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.76	1.00		0.64	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1409	1583		1201	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	35	32	124	68	5	24	31	1408	123	50	1979	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)	38	35	135	74	5	26	34	1530	134	54	2151	46
RTOR Reduction (vph)	0	0	79	0	0	23	0	0	34	0	0	10
Lane Group Flow (vph)	0	73	56	0	79	3	34	1530	100	54	2151	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)		12.4	12.4		12.4	12.4	4.0	93.6	93.6	7.0	96.6	96.6
Effective Green, g (s)		12.4	12.4		12.4	12.4	4.0	93.6	93.6	7.0	96.6	96.6
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.03	0.75	0.75	0.06	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)		140	157		119	157	57	2650	1185	99	2735	1223
v/s Ratio Prot							0.02	0.43		c0.03	c0.61	
v/s Ratio Perm		0.05	0.09		0.07	0.02			0.08			0.03
v/c Ratio		0.52	0.35		0.66	0.02	0.60	0.58	0.08	0.55	0.79	0.03
Uniform Delay, d1		53.5	52.6		54.3	50.8	59.7	6.9	4.2	57.5	8.2	3.3
Progression Factor		1.00	1.00		1.00	1.00	1.21	1.31	0.70	0.92	1.51	2.35
Incremental Delay, d2		3.5	1.4		13.1	0.0	13.4	0.8	0.1	4.0	1.6	0.0
Delay (s)		57.0	53.9		67.4	50.8	85.9	9.9	3.1	56.6	14.0	7.8
Level of Service		E	D		E	D	F	A	A	E	B	A
Approach Delay (s)		55.0			63.3			10.9			14.9	
Approach LOS		E			E			B			B	
Intersection Summary												
HCM Average Control Delay			16.5				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.79									
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												

HCM Signalized Intersection Capacity Analysis

























8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

						
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)	302	180	101	1200	1661	397
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	196	110	1304	1805	432
RTOR Reduction (vph)	0	114	0	0	0	137
Lane Group Flow (vph)	328	82	110	1304	1805	295
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.3	26.3	10.2	90.7	76.5	76.5
Effective Green, g (s)	26.3	26.3	10.2	90.7	76.5	76.5
Actuated g/C Ratio	0.21	0.21	0.08	0.73	0.61	0.61
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)	372	333	144	2568	2166	969
v/s Ratio Prot	c0.19		c0.06	0.37	c0.51	
v/s Ratio Perm		0.12				0.27
v/c Ratio	0.88	0.24	0.76	0.51	0.83	0.30
Uniform Delay, d1	47.8	41.1	56.2	7.5	19.2	11.6
Progression Factor	1.00	1.00	1.00	1.00	0.86	0.98
Incremental Delay, d2	20.9	0.4	21.1	0.7	2.6	0.5
Delay (s)	68.8	41.5	77.3	8.2	19.2	11.8
Level of Service	E	D	E	A	B	B
Approach Delay (s)	58.6			13.5	17.7	
Approach LOS	E			B	B	
Intersection Summary						
HCM Average Control Delay			21.4		HCM Level of Service	C
HCM Volume to Capacity ratio			0.84			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			78.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.71	1.00	1.00		1.00		0.75	1.00			1.00	1.00
Satd. Flow (perm)	2555	3539	1583		3539		2714	1863			1863	1583
Volume (vph)	131	33	90	0	67	0	67	12	0	0	9	59
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)	142	36	98	0	73	0	73	13	0	0	10	64
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	142	36	39	0	73	0	73	13	0	0	10	26
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			16.0	16.0
Effective Green, g (s)	16.0	16.0	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			0.40	0.40
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0			4.0	4.0
Lane Grp Cap (vph)	1022	1416	633		1416		1086	745			745	633
v/s Ratio Prot		0.01			0.02			0.01			0.01	
v/s Ratio Perm	0.06		0.06				0.03					0.04
v/c Ratio	0.14	0.03	0.06		0.05		0.07	0.02			0.01	0.04
Uniform Delay, d1	7.6	7.3	7.4		7.4		7.4	7.3			7.2	7.3
Progression Factor	1.00	1.00	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	0.0			0.0	0.1
Delay (s)	7.9	7.3	7.6		7.4		7.5	7.3			7.3	7.4
Level of Service	A	A	A		A		A	A			A	A
Approach Delay (s)		7.7			7.4			7.5			7.4	
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	25.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	88	95	227	40	177	38	1188	53	167	1589	77
Lane Group Flow (vph)	101	96	103	141	149	192	41	1291	58	182	1727	84
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)	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 (%)	17.6%	17.6%	17.6%	20.0%	20.0%	20.0%	14.4%	46.4%	46.4%	16.0%	48.0%	48.0%
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	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	0.46	0.41	0.35	0.63	0.65	0.51	0.26	0.74	0.07	0.46	0.90	0.10
Control Delay	55.9	54.5	12.0	56.7	57.3	9.8	59.0	18.7	7.5	69.1	25.6	2.1
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	55.9	54.5	12.0	56.7	57.3	9.8	59.0	18.7	7.5	69.1	25.6	2.1
Queue Length 50th (ft)	81	76	0	114	122	0	33	95	1	79	768	1
Queue Length 95th (ft)	141	133	52	182	191	66	m67	335	m24	119	#918	m8
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	242	255	316	282	287	426	198	1743	804	439	1919	883
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	0.42	0.38	0.33	0.50	0.52	0.45	0.21	0.74	0.07	0.41	0.90	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: 125

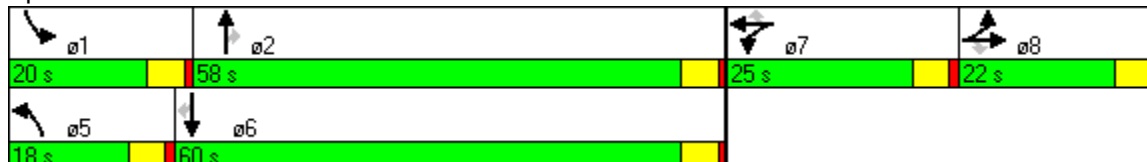
Control Type: Actuated-Coordinated

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	17	122	86	28	106	30	1384	68	34	1387	21
Lane Group Flow (vph)	150	18	133	93	30	115	33	1504	74	37	1508	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	0.66	0.06	0.36	0.41	0.10	0.32	0.21	0.61	0.07	0.24	0.61	0.02
Control Delay	54.8	41.4	8.7	48.4	42.2	9.0	32.7	24.3	9.3	44.7	25.1	9.4
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	54.8	41.4	8.7	48.4	42.2	9.0	32.7	24.3	9.3	44.7	25.1	9.4
Queue Length 50th (ft)	114	12	0	68	21	0	21	556	22	23	636	6
Queue Length 95th (ft)	180	33	54	117	47	50	m36	618	m37	m44	746	m14
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	286	388	435	289	388	420	156	2475	1129	156	2475	1114
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	0.05	0.31	0.32	0.08	0.27	0.21	0.61	0.07	0.24	0.61	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



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

									
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	211	20	346	2	398	1220	3	1159	110
Lane Group Flow (vph)	122	129	376	21	433	1335	3	1260	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)	22.0	22.0	50.3	12.0	28.3	82.0	9.0	62.7	62.7
Total Split (%)	17.6%	17.6%	40.2%	9.6%	22.6%	65.6%	7.2%	50.2%	50.2%
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	0.58	0.60	0.36	0.19	0.73	0.51	0.05	0.65	0.13
Control Delay	62.6	63.3	27.3	51.6	44.5	16.5	59.0	24.0	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	63.3	27.3	51.6	44.5	16.5	59.0	24.0	4.6
Queue Length 50th (ft)	106	112	52	13	188	463	2	422	5
Queue Length 95th (ft)	173	182	154	41	212	598	13	520	39
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	242	245	1086	116	667	2611	71	1942	918
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	0.53	0.35	0.18	0.65	0.51	0.04	0.65	0.13

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: 70

Control Type: Actuated-Coordinated

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	330	281	81	455	431	185
Lane Group Flow (vph)	359	305	88	495	468	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)	52.3	52.3	30.0	82.3	42.7	125.0
Total Split (%)	41.8%	41.8%	24.0%	65.8%	34.2%	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	0.30	0.27	0.59	0.18	0.77	0.13
Control Delay	11.9	2.0	67.0	1.2	49.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.0	67.0	1.2	49.9	0.2
Queue Length 50th (ft)	118	0	74	11	188	0
Queue Length 95th (ft)	216	40	m120	18	233	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1199	1127	368	2687	1063	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	0.30	0.27	0.24	0.18	0.44	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
 m Volume for 95th percentile queue is metered by upstream signal.

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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	73	236	152	75	152	111	1067	145	154	1560	68
Lane Group Flow (vph)	54	79	257	165	82	165	121	1160	158	167	1696	74
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	28.0	16.0	12.0	20.0	14.0	16.0	71.0	12.0	14.0	69.0	69.0
Total Split (%)	16.0%	22.4%	12.8%	9.6%	16.0%	11.2%	12.8%	56.8%	9.6%	11.2%	55.2%	55.2%
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	0.42	0.23	0.66	0.74	0.50	0.23	0.55	0.52	0.08	0.53	0.80	0.08
Control Delay	57.2	50.6	47.8	77.5	57.8	6.0	44.5	29.5	7.4	43.4	27.7	12.7
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	57.2	50.6	47.8	77.5	57.8	6.0	44.5	29.5	7.4	43.4	27.7	12.7
Queue Length 50th (ft)	43	31	177	69	64	0	89	465	17	71	457	14
Queue Length 95th (ft)	84	53	243	#121	115	29	142	579	51	m79	#582	m25
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	227	679	387	223	238	729	220	2246	2081	325	2131	975
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	0.24	0.12	0.66	0.74	0.34	0.23	0.55	0.52	0.08	0.51	0.80	0.08

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: 100

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

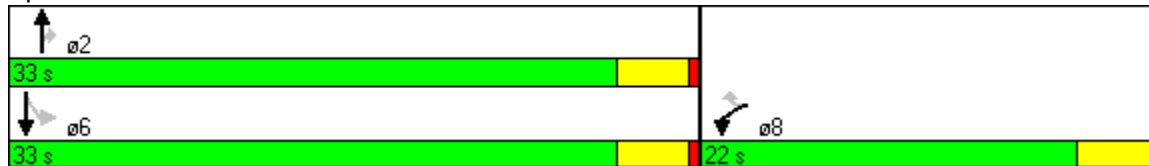


	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	117	60	558	117	59	374
Lane Group Flow (vph)	127	65	607	127	64	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	22.0	22.0	33.0	33.0	33.0	33.0
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	0.39	0.19	0.49	0.12	0.17	0.33
Control Delay	13.6	5.4	6.3	1.3	5.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	5.4	6.3	1.3	5.6	5.0
Queue Length 50th (ft)	21	0	61	0	5	35
Queue Length 95th (ft)	65	22	155	14	22	91
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	553	539	1314	1154	390	1314
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	0.23	0.12	0.46	0.11	0.16	0.31

Intersection Summary

Cycle Length: 55
 Actuated Cycle Length: 57.2
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	32	124	68	5	24	31	1408	123	50	1979	42
Lane Group Flow (vph)	0	73	135	0	79	26	34	1530	134	54	2151	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	10.0	92.0	92.0	13.0	95.0	95.0
Total Split (%)	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	8.0%	73.6%	73.6%	10.4%	76.0%	76.0%
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		0.48	0.57		0.64	0.14	0.37	0.57	0.11	0.47	0.77	0.04
Control Delay		57.7	26.3		64.3	18.1	79.5	11.0	0.8	58.2	15.7	3.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		57.7	26.3		64.3	18.1	79.5	11.0	0.8	58.2	15.7	3.2
Queue Length 50th (ft)		56	36		62	0	0	420	1	41	552	1
Queue Length 95th (ft)		104	100		114	28	m52	521	m6	m53	821	m10
Internal Link Dist (ft)		212			349			829			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		195	279		158	225	93	2671	1228	128	2779	1253
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	0.48		0.50	0.12	0.37	0.57	0.11	0.42	0.77	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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	302	180	101	1200	1661	397
Lane Group Flow (vph)	328	196	110	1304	1805	432
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)	33.0	33.0	14.0	92.0	78.0	78.0
Total Split (%)	26.4%	26.4%	11.2%	73.6%	62.4%	62.4%
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	0.88	0.44	0.76	0.51	0.83	0.39
Control Delay	62.6	14.8	85.1	8.6	20.2	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	14.8	85.1	8.6	20.2	3.2
Queue Length 50th (ft)	252	33	89	232	746	38
Queue Length 95th (ft)	#393	102	#189	282	516	37
Internal Link Dist (ft)	652			1058	2861	
Turn Bay Length (ft)						
Base Capacity (vph)	411	479	148	2568	2166	1106
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	0.80	0.41	0.74	0.51	0.83	0.39

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

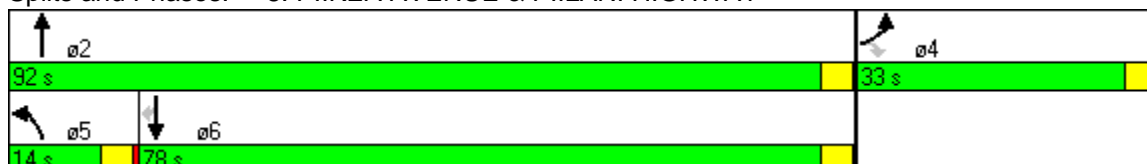
Natural Cycle: 80

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



Queues

12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	131	33	90	67	67	12	9	59
Lane Group Flow (vph)	142	36	98	73	73	13	10	64
Turn Type	Perm		Perm		Perm			Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		4		2			6
Minimum Split (s)	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
Total Split (%)	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
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
v/c Ratio	0.14	0.03	0.14	0.05	0.07	0.02	0.01	0.10
Control Delay	8.1	7.4	3.0	7.5	7.7	7.4	7.3	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	7.4	3.0	7.5	7.7	7.4	7.3	3.2
Queue Length 50th (ft)	9	2	0	4	4	2	1	0
Queue Length 95th (ft)	21	7	18	13	12	8	7	14
Internal Link Dist (ft)		86		521		103	80	
Turn Bay Length (ft)								
Base Capacity (vph)	1022	1416	692	1416	1086	745	745	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.03	0.14	0.05	0.07	0.02	0.01	0.10

Intersection Summary

Cycle Length: 40

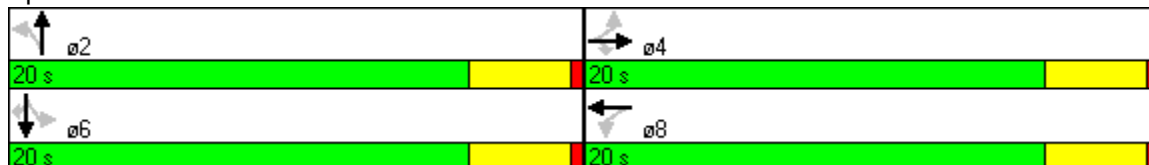
Actuated Cycle Length: 40

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















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

5/30/2014

												
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	153	7	20	153	60	13	6	63	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	166	8	22	166	65	14	7	68	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)					333							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	232			174			447	495	170	530	466	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226			174			443	492	170	527	463	193
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	57	99	98
cM capacity (veh/h)	1333			1403			496	458	874	407	476	842
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	25	174	22	232	14	75	176	18				
Volume Left	25	0	22	0	14	0	176	0				
Volume Right	0	8	0	65	0	68	0	15				
cSH	1333	1700	1403	1700	496	810	407	742				
Volume to Capacity	0.02	0.10	0.02	0.14	0.03	0.09	0.43	0.02				
Queue Length 95th (ft)	1	0	1	0	2	8	53	2				
Control Delay (s)	7.8	0.0	7.6	0.0	12.5	9.9	20.4	10.0				
Lane LOS	A		A		B	A	C	A				
Approach Delay (s)	1.0		0.7		10.3		19.4					
Approach LOS					B		C					
Intersection Summary												
Average Delay			6.9									
Intersection Capacity Utilization			40.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

5/30/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	30	175	13	4	146	2	9	0	2	3	0	66
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)	33	190	14	4	159	2	10	0	2	3	0	72
Approach Volume (veh/h)		237			165			12			75	
Crossing Volume (veh/h)		8			42			226			173	
High Capacity (veh/h)		1376			1340			1160			1210	
High v/c (veh/h)		0.17			0.12			0.01			0.06	
Low Capacity (veh/h)		1154			1120			957			1002	
Low v/c (veh/h)		0.21			0.15			0.01			0.07	
Intersection Summary												
Maximum v/c High			0.17									
Maximum v/c Low			0.21									
Intersection Capacity Utilization			28.1%			ICU Level of Service				A		







HCM Unsignalized Intersection Capacity Analysis
 13: UPCOUNTRY HIGHWAY & DRIVE B SOUTH

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	255	86	0	279	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	277	93	0	303	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			371		429	139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			371		429	139
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)			1184		554	884
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	139	139	93	152	152	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	93	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.08	0.05	0.09	0.09	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			11.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: UPCOUNTRY HIGHWAY & DRIVE B NORTH

5/30/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	255	192	0	0	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	277	209	0	0	95
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	209				347	104
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209				347	104
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	90
cM capacity (veh/h)	1359				624	930
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	139	139	104	104	0	95
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	95
cSH	1700	1700	1700	1700	1700	930
Volume to Capacity	0.08	0.08	0.06	0.06	0.00	0.10
Queue Length 95th (ft)	0	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.3
Approach LOS						A
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			17.4%		ICU Level of Service	A
Analysis Period (min)			15			









HCM Unsignalized Intersection Capacity Analysis
 15: UPCOUNTRY HIGHWAY & DRIVE C

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	3	32	0	3	64	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	35	0	3	70	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			38		5	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			38		5	3
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)			1570		1016	1079
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	3	35	0	2	2	70
Volume Left	0	0	0	0	0	70
Volume Right	0	35	0	0	0	0
cSH	1700	1700	1700	1700	1700	1016
Volume to Capacity	0.00	0.02	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	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			5.5			
Intersection Capacity Utilization			13.5%		ICU Level of Service	A
Analysis Period (min)			15			

























HCM Unsignalized Intersection Capacity Analysis
 16: UPCOUNTRY HIGHWAY & DRIVE D

5/30/2014

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	3	0	0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3	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			3		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		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)			1619		1023	1085
Direction, Lane #	EB 1	NB 1				
Volume Total	3	3				
Volume Left	0	3				
Volume Right	3	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			4.3			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

























HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1751	1583	1681	1720	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1751	1583	1681	1720	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	115	76	120	243	66	168	147	1742	99	138	1632	84
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)	125	83	130	264	72	183	160	1893	108	150	1774	91
RTOR Reduction (vph)	0	0	119	0	0	100	0	0	28	0	0	25
Lane Group Flow (vph)	102	106	11	164	172	83	160	1893	80	150	1774	66
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)	11.6	11.6	11.6	17.7	17.7	17.7	15.6	92.7	92.7	8.0	85.1	85.1
Effective Green, g (s)	12.6	12.6	12.6	18.7	18.7	18.7	16.6	93.7	93.7	9.0	86.1	86.1
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.11	0.62	0.62	0.06	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)	141	147	133	210	214	197	196	2211	989	206	2031	909
v/s Ratio Prot	0.06	0.06		0.10	0.10		c0.09	c0.53		0.04	0.50	
v/s Ratio Perm			0.08			0.12			0.07			0.06
v/c Ratio	0.72	0.72	0.08	0.78	0.80	0.42	0.82	0.86	0.08	0.73	0.87	0.07
Uniform Delay, d1	67.0	67.0	63.4	63.7	63.9	60.7	65.2	22.7	11.1	69.3	27.3	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.38	2.38
Incremental Delay, d2	17.2	16.5	0.3	17.0	19.2	1.5	21.3	4.5	0.2	8.0	4.3	0.1
Delay (s)	84.2	83.4	63.7	80.7	83.1	62.1	86.6	27.2	11.3	65.1	41.9	34.0
Level of Service	F	F	E	F	F	E	F	C	B	E	D	C
Approach Delay (s)		76.1			74.9			30.8			43.3	
Approach LOS		E			E			C			D	
Intersection Summary												
HCM Average Control Delay			43.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			80.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

												
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	0.73	1.00	1.00	0.74	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1354	1863	1583	1385	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	78	19	118	72	42	67	91	1715	151	100	1643	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	21	128	78	46	73	99	1864	164	109	1786	70
RTOR Reduction (vph)	0	0	115	0	0	66	0	0	34	0	0	15
Lane Group Flow (vph)	85	21	13	78	46	7	99	1864	130	109	1786	55
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)	15.0	15.0	15.0	15.0	15.0	15.0	12.6	107.4	107.4	13.6	108.4	108.4
Effective Green, g (s)	15.0	15.0	15.0	15.0	15.0	15.0	13.6	108.4	108.4	14.6	109.4	109.4
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.72	0.72	0.10	0.73	0.73
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)	135	186	158	139	186	158	160	2558	1144	172	2581	1155
v/s Ratio Prot		0.01			0.02		0.06	c0.53		c0.06	0.50	
v/s Ratio Perm	0.06		0.08	0.06		0.05			0.10			0.04
v/c Ratio	0.63	0.11	0.08	0.56	0.25	0.05	0.62	0.73	0.11	0.63	0.69	0.05
Uniform Delay, d1	64.8	61.4	61.2	64.4	62.3	61.0	65.7	12.2	6.3	65.1	11.1	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.79	2.13	1.20	1.40	1.20
Incremental Delay, d2	8.9	0.3	0.2	5.1	0.7	0.1	3.8	1.0	0.1	5.4	1.1	0.1
Delay (s)	73.7	61.7	61.5	69.5	63.0	61.2	76.7	22.9	13.5	83.3	16.6	6.9
Level of Service	E	E	E	E	E	E	E	C	B	F	B	A
Approach Delay (s)		65.9			64.9			24.6			20.0	
Approach LOS		E			E			C			B	
Intersection Summary												
HCM Average Control Delay			26.5				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			73.9%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

												
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	295	33	12	44	482	1244	15	10	1347	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	321	36	13	48	524	1352	16	11	1464	195
RTOR Reduction (vph)	0	0	105	0	24	0	0	0	0	0	0	63
Lane Group Flow (vph)	201	210	216	0	73	0	524	1368	0	11	1464	132
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)	21.9	21.9	52.0		9.1		24.1	95.0		2.0	72.4	72.4
Effective Green, g (s)	23.9	23.9	52.5		11.1		24.6	97.0		2.0	74.4	74.4
Actuated g/C Ratio	0.16	0.16	0.35		0.07		0.16	0.65		0.01	0.50	0.50
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)	268	269	975		126		563	2285		24	1755	785
v/s Ratio Prot	0.12	c0.12			c0.06		c0.15	0.39		0.01	c0.41	
v/s Ratio Perm			0.12									0.12
v/c Ratio	0.75	0.78	0.22		0.58		0.93	0.60		0.46	0.83	0.17
Uniform Delay, d1	60.2	60.5	34.3		67.2		61.9	15.3		73.5	32.5	20.8
Progression Factor	0.77	0.77	1.19		1.00		1.10	1.14		1.00	1.00	1.00
Incremental Delay, d2	10.2	12.5	0.0		6.3		17.1	0.8		5.0	4.8	0.5
Delay (s)	56.6	59.2	40.9		73.5		84.9	18.2		78.4	37.3	21.2
Level of Service	E	E	D		E		F	B		E	D	C
Approach Delay (s)		50.5			73.5			36.7			35.7	
Approach LOS		D			E			D			D	
Intersection Summary												
HCM Average Control Delay			39.4			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			78.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

























	→	↘	↙	←	↖	↗
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)	485	557	141	446	318	178
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	527	605	153	485	346	193
RTOR Reduction (vph)	0	239	0	0	0	148
Lane Group Flow (vph)	527	366	153	485	346	45
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	83.0	83.0	18.5	105.5	33.5	33.5
Effective Green, g (s)	84.5	84.5	18.5	107.0	35.0	35.0
Actuated g/C Ratio	0.56	0.56	0.12	0.71	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)	1049	892	218	2524	801	369
v/s Ratio Prot	0.28		c0.09	0.14	0.10	
v/s Ratio Perm		0.38				0.12
v/c Ratio	0.50	0.41	0.70	0.19	0.43	0.12
Uniform Delay, d1	19.9	18.6	63.1	7.1	49.0	45.4
Progression Factor	1.00	1.00	1.47	0.23	1.00	1.00
Incremental Delay, d2	1.7	1.4	5.5	0.1	1.7	0.7
Delay (s)	21.7	20.0	98.4	1.8	50.7	46.1
Level of Service	C	B	F	A	D	D
Approach Delay (s)	20.8			25.0	49.1	
Approach LOS	C			C	D	

Intersection Summary

HCM Average Control Delay	28.5	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	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
 5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

												
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	0.97	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	3433	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	3433	3539	2787	3433	3539	1583
Volume (vph)	49	164	189	490	179	506	135	1430	468	470	1365	92
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)	52	173	199	516	188	533	142	1505	493	495	1437	97
RTOR Reduction (vph)	0	0	24	0	0	103	0	0	27	0	0	25
Lane Group Flow (vph)	52	173	175	516	188	430	142	1505	466	495	1437	72
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)	9.3	14.5	27.5	30.5	35.7	67.3	13.0	87.4	117.9	31.6	106.0	106.0
Effective Green, g (s)	9.3	14.5	27.5	30.5	35.7	67.3	13.0	87.4	117.9	31.6	106.0	106.0
Actuated g/C Ratio	0.05	0.08	0.15	0.17	0.20	0.37	0.07	0.49	0.66	0.18	0.59	0.59
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)	91	285	277	582	369	1104	248	1718	1887	603	2084	932
v/s Ratio Prot	0.03	0.05	c0.05	c0.15	0.10	0.08	0.04	c0.43	0.04	c0.14	0.41	
v/s Ratio Perm			0.07			0.11			0.13			0.06
v/c Ratio	0.57	0.61	0.63	0.89	0.51	0.39	0.57	0.88	0.25	0.82	0.69	0.08
Uniform Delay, d1	83.4	80.0	71.5	73.1	64.3	41.3	80.8	41.4	12.8	71.5	25.6	15.9
Progression Factor	1.00	1.00	1.00	0.86	1.02	1.09	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.4	3.6	4.7	14.1	1.0	0.2	3.2	6.6	0.1	8.8	1.9	0.2
Delay (s)	91.8	83.6	76.2	77.1	66.4	45.4	84.0	48.1	12.8	80.3	27.5	16.1
Level of Service	F	F	E	E	E	D	F	D	B	F	C	B
Approach Delay (s)		81.1			61.8			42.3			39.8	
Approach LOS		F			E			D			D	
Intersection Summary												
HCM Average Control Delay			48.4	HCM Level of Service				D				
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			180.0	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			84.8%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014























						
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)	157	114	544	227	137	522
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	124	591	247	149	567
RTOR Reduction (vph)	0	102	0	114	0	0
Lane Group Flow (vph)	171	22	591	133	149	567
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	10.8	10.8	33.0	33.0	5.5	42.5
Effective Green, g (s)	10.8	10.8	33.0	33.0	5.5	42.5
Actuated g/C Ratio	0.18	0.18	0.54	0.54	0.09	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)	312	279	1003	852	159	1292
v/s Ratio Prot	c0.10		c0.32		c0.08	0.30
v/s Ratio Perm		0.08		0.16		
v/c Ratio	0.55	0.08	0.59	0.16	0.94	0.44
Uniform Delay, d1	23.0	21.1	9.6	7.1	27.7	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.1	0.9	0.1	52.5	0.2
Delay (s)	25.0	21.2	10.5	7.2	80.2	4.4
Level of Service	C	C	B	A	F	A
Approach Delay (s)	23.4		9.5			20.2
Approach LOS	C		A			C

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			















HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

												
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)		1781	1583		1780	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00		0.61	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1332	1583		1127	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	67	6	90	35	3	12	80	2056	27	11	1910	112
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)	73	7	98	38	3	13	87	2235	29	12	2076	122
RTOR Reduction (vph)	0	0	89	0	0	12	0	0	4	0	0	20
Lane Group Flow (vph)	0	80	9	0	41	1	87	2235	25	12	2076	102
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)		14.1	14.1		14.1	14.1	12.4	120.8	120.8	3.1	111.5	111.5
Effective Green, g (s)		14.1	14.1		14.1	14.1	12.4	120.8	120.8	3.1	111.5	111.5
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.08	0.81	0.81	0.02	0.74	0.74
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)		125	149		106	149	146	2850	1275	37	2631	1177
v/s Ratio Prot							c0.05	c0.63		0.01	0.59	
v/s Ratio Perm		0.06	0.06		0.04	0.01			0.02			0.08
v/c Ratio		0.64	0.06		0.39	0.01	0.60	0.78	0.02	0.32	0.79	0.09
Uniform Delay, d1		65.5	61.9		63.9	61.6	66.4	7.7	2.9	72.4	11.9	5.3
Progression Factor		1.00	1.00		1.00	1.00	0.91	0.86	1.34	1.00	1.00	1.00
Incremental Delay, d2		10.7	0.2		2.3	0.0	4.5	1.6	0.0	5.1	2.5	0.1
Delay (s)		76.2	62.1		66.2	61.6	64.8	8.2	3.9	77.5	14.4	5.4
Level of Service		E	E		E	E	E	A	A	E	B	A
Approach Delay (s)		68.4			65.1			10.2			14.3	
Approach LOS		E			E			B			B	
Intersection Summary												
HCM Average Control Delay			14.9				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			80.9%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

						
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)	348	251	244	1686	1510	472
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	378	273	265	1833	1641	513
RTOR Reduction (vph)	0	193	0	0	0	143
Lane Group Flow (vph)	378	80	265	1833	1641	370
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	33.8	33.8	26.3	108.2	77.9	77.9
Effective Green, g (s)	33.8	33.8	26.3	108.2	77.9	77.9
Actuated g/C Ratio	0.23	0.23	0.18	0.72	0.52	0.52
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	310	2553	1838	822
v/s Ratio Prot	c0.21		c0.15	0.52	c0.46	
v/s Ratio Perm		0.17				0.32
v/c Ratio	0.95	0.22	0.85	0.72	0.89	0.45
Uniform Delay, d1	57.2	47.4	60.0	12.1	32.3	22.6
Progression Factor	1.00	1.00	1.00	1.00	0.76	0.70
Incremental Delay, d2	31.5	0.3	19.9	1.8	4.7	1.1
Delay (s)	88.7	47.7	79.9	13.9	29.3	17.0
Level of Service	F	D	E	B	C	B
Approach Delay (s)	71.5			22.2	26.3	
Approach LOS	E			C	C	
Intersection Summary						
HCM Average Control Delay			30.6		HCM Level of Service	C
HCM Volume to Capacity ratio			0.90			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			84.5%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 12: KAONOULU STREET & DRIVE A

5/30/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433	1863			1863	1583
Volume (vph)	376	130	287	0	390	0	390	37	0	0	60	171
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)	409	141	312	0	424	0	424	40	0	0	65	186
RTOR Reduction (vph)	0	0	103	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	409	141	209	0	424	0	424	40	0	0	65	45
Turn Type	Prot		pt+ov	Prot			Prot			Perm		Perm
Protected Phases	7	4	4 5	3	8		5	2			6	
Permitted Phases										6		6
Actuated Green, G (s)	17.7	37.2	60.2		15.5		19.0	44.8			21.8	21.8
Effective Green, g (s)	17.7	37.2	60.2		15.5		19.0	44.8			21.8	21.8
Actuated g/C Ratio	0.20	0.41	0.67		0.17		0.21	0.50			0.24	0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	675	1463	1059		609		725	927			451	383
v/s Ratio Prot	c0.12	0.04	0.20		c0.12		c0.12	0.02			0.03	
v/s Ratio Perm												0.12
v/c Ratio	0.61	0.10	0.20		0.70		0.58	0.04			0.14	0.12
Uniform Delay, d1	33.0	16.1	5.7		35.0		32.0	11.6			26.8	26.6
Progression Factor	1.20	1.26	5.22		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.4	0.0	0.1		3.5		1.2	0.1			0.7	0.6
Delay (s)	40.9	20.3	29.7		38.5		33.2	11.7			27.4	27.2
Level of Service	D	C	C		D		C	B			C	C
Approach Delay (s)		33.5			38.5			31.3			27.3	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			33.3				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			49.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	76	120	243	66	168	147	1742	99	138	1632	84
Lane Group Flow (vph)	102	106	130	164	172	183	160	1893	108	150	1774	91
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)	17.0	17.0	17.0	24.0	24.0	24.0	22.0	96.0	96.0	13.0	87.0	87.0
Total Split (%)	11.3%	11.3%	11.3%	16.0%	16.0%	16.0%	14.7%	64.0%	64.0%	8.7%	58.0%	58.0%
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	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.72	0.72	0.52	0.78	0.80	0.62	0.82	0.86	0.11	0.73	0.87	0.10
Control Delay	91.2	90.3	17.2	82.5	83.8	32.1	86.6	28.2	4.6	73.1	43.4	15.8
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	91.2	90.3	17.2	82.5	83.8	32.1	86.6	28.2	4.6	73.1	43.4	15.8
Queue Length 50th (ft)	104	108	0	165	173	62	154	774	13	77	654	26
Queue Length 95th (ft)	#196	#201	67	#273	#289	148	#263	895	38 m	#118	980	m74
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	146	152	256	224	229	310	212	2212	1017	206	2031	933
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	0.70	0.70	0.51	0.73	0.75	0.59	0.75	0.86	0.11	0.73	0.87	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 100

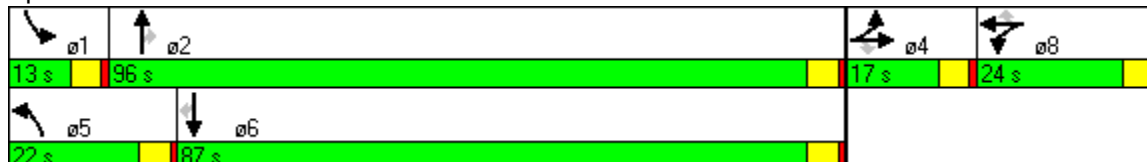
Control Type: Actuated-Coordinated

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	19	118	72	42	67	91	1715	151	100	1643	64
Lane Group Flow (vph)	85	21	128	78	46	73	99	1864	164	109	1786	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)	28.0	28.0	28.0	28.0	28.0	28.0	20.0	100.0	100.0	22.0	102.0	102.0
Total Split (%)	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	13.3%	66.7%	66.7%	14.7%	68.0%	68.0%
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	0.63	0.11	0.47	0.56	0.25	0.33	0.62	0.73	0.14	0.63	0.69	0.06
Control Delay	68.8	58.9	11.7	67.3	61.1	13.6	78.1	26.0	5.5	83.7	18.6	3.2
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	68.8	58.9	11.7	67.3	61.1	13.6	78.1	26.0	5.5	83.7	18.6	3.2
Queue Length 50th (ft)	82	19	0	74	43	0	88	916	26	98	817	5
Queue Length 95th (ft)	135	45	61	125	81	48	m109	1084	m56	m123	1006	m22
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	217	298	361	222	298	315	189	2558	1178	212	2582	1170
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	0.39	0.07	0.35	0.35	0.15	0.23	0.52	0.73	0.14	0.51	0.69	0.06

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

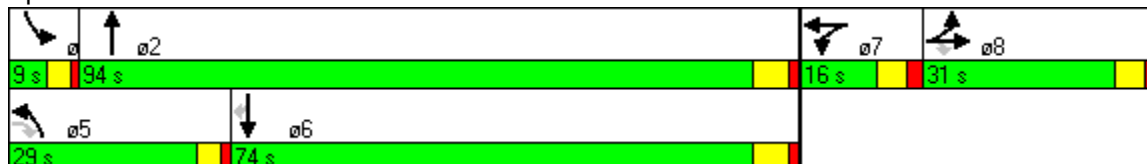
5/30/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	369	9	295	12	482	1244	10	1347	179
Lane Group Flow (vph)	201	210	321	97	524	1368	11	1464	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	60.0	16.0	29.0	94.0	9.0	74.0	74.0
Total Split (%)	20.7%	20.7%	40.0%	10.7%	19.3%	62.7%	6.0%	49.3%	49.3%
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	0.75	0.78	0.30	0.64	0.93	0.58	0.19	0.83	0.23
Control Delay	56.2	57.7	20.0	65.3	83.9	18.3	77.9	38.8	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	57.7	20.0	65.3	83.9	18.3	77.9	38.8	9.3
Queue Length 50th (ft)	195	205	97	68	280	234	11	670	37
Queue Length 95th (ft)	294	308	140	132	#372	535	34	785	88
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	303	304	1076	160	572	2340	59	1754	847
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	0.66	0.69	0.30	0.61	0.92	0.58	0.19	0.83	0.23

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 100
 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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↖	↗
Volume (vph)	485	557	141	446	318	178
Lane Group Flow (vph)	527	605	153	485	346	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)	71.0	71.0	40.0	111.0	39.0	39.0
Total Split (%)	47.3%	47.3%	26.7%	74.0%	26.0%	26.0%
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	0.50	0.53	0.70	0.19	0.43	0.37
Control Delay	23.1	4.4	93.0	1.8	51.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	4.4	93.0	1.8	51.0	8.0
Queue Length 50th (ft)	298	24	156	16	150	0
Queue Length 95th (ft)	467	112	m134	m16	200	66
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1049	1131	425	2524	801	517
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	0.50	0.53	0.36	0.19	0.43	0.37

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 30 (20%), 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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	164	189	490	179	506	135	1430	468	470	1365	92
Lane Group Flow (vph)	52	173	199	516	188	533	142	1505	493	495	1437	97
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	36.0	36.0	35.0	23.0	89.0	36.0	35.0	101.0	101.0
Total Split (%)	11.1%	11.1%	12.8%	20.0%	20.0%	19.4%	12.8%	49.4%	20.0%	19.4%	56.1%	56.1%
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	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	0.50	0.64	0.68	0.89	0.51	0.44	0.57	0.87	0.26	0.82	0.68	0.10
Control Delay	87.0	87.3	66.1	75.4	71.1	30.4	83.4	47.9	9.7	81.0	28.3	7.6
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	87.0	87.3	66.1	75.4	71.1	30.4	83.4	47.9	9.7	81.0	28.3	7.6
Queue Length 50th (ft)	61	106	193	322	224	205	85	851	103	291	606	18
Queue Length 95th (ft)	111	150	278	#394	316	273	123	961	133	#368	761	51
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	157	315	345	610	370	1223	362	1745	1947	628	2099	964
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	0.33	0.55	0.58	0.85	0.51	0.44	0.39	0.86	0.25	0.79	0.68	0.10

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

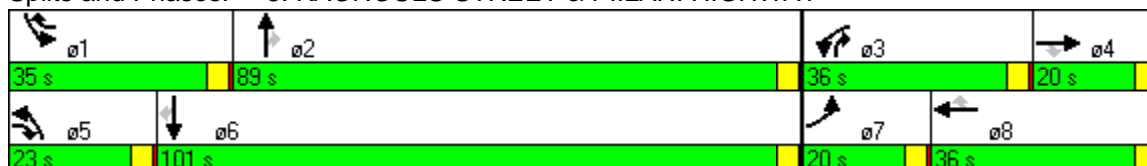
Natural Cycle: 120

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



Queues

6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	157	114	544	227	137	522
Lane Group Flow (vph)	171	124	591	247	149	567
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	31.0	31.0	9.0	40.0
Total Split (%)	33.3%	33.3%	51.7%	51.7%	15.0%	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	0.52	0.31	0.60	0.26	0.94	0.44
Control Delay	19.9	5.5	13.4	2.3	87.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	5.5	13.4	2.3	87.0	6.2
Queue Length 50th (ft)	42	0	125	0	42	67
Queue Length 95th (ft)	97	33	270	32	#157	169
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	455	499	1054	1003	159	1343
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	0.25	0.56	0.25	0.94	0.42

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 61.7

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	6	90	35	3	12	80	2056	27	11	1910	112
Lane Group Flow (vph)	0	80	98	0	41	13	87	2235	29	12	2076	122
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)	27.0	27.0	27.0	27.0	27.0	27.0	25.0	107.0	107.0	16.0	98.0	98.0
Total Split (%)	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	16.7%	71.3%	71.3%	10.7%	65.3%	65.3%
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 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		0.64	0.41		0.32	0.08	0.59	0.77	0.02	0.16	0.79	0.10
Control Delay		70.0	12.8		63.9	25.0	62.3	9.0	3.1	69.8	16.4	3.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		70.0	12.8		63.9	25.0	62.3	9.0	3.1	69.8	16.4	3.0
Queue Length 50th (ft)		77	0		38	0	85	283	1	12	593	10
Queue Length 95th (ft)		131	56		77	22	m113	682	m6	35	925	36
Internal Link Dist (ft)		212			261			1847			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		205	326		209	254	248	2908	1304	142	2631	1197
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		0.39	0.30		0.20	0.05	0.35	0.77	0.02	0.08	0.79	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 40 (27%), 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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	348	251	244	1686	1510	472
Lane Group Flow (vph)	378	273	265	1833	1641	513
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)	39.0	39.0	36.0	111.0	75.0	75.0
Total Split (%)	26.0%	26.0%	24.0%	74.0%	50.0%	50.0%
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	0.95	0.50	0.85	0.72	0.89	0.53
Control Delay	84.1	10.6	69.8	14.4	30.8	8.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	84.1	10.6	69.8	14.7	30.8	8.4
Queue Length 50th (ft)	364	18	253	514	668	57
Queue Length 95th (ft)	#559	101	347	594	#984	189
Internal Link Dist (ft)	745			1063	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	413	560	378	2551	1836	964
Starvation Cap Reductn	0	0	0	233	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	0.49	0.70	0.79	0.89	0.53

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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.

















Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY

ø2	ø4
111 s	39 s
ø5	ø6
36 s	75 s

Queues

12: KAONOULU STREET & DRIVE A

5/30/2014

									ø3
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR	ø3
Lane Configurations									
Volume (vph)	376	130	287	390	390	37	60	171	
Lane Group Flow (vph)	409	141	312	424	424	40	65	186	
Turn Type	Prot		pt+ov		Prot			Perm	
Protected Phases	7	4	4 5	8	5	2	6		3
Permitted Phases								6	
Detector Phases	7	4	4 5	8	5	2	6	6	
Minimum Initial (s)	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	20.0	20.0	8.0
Total Split (s)	23.0	37.0	60.0	23.0	23.0	44.0	21.0	21.0	9.0
Total Split (%)	25.6%	41.1%	66.7%	25.6%	25.6%	48.9%	23.3%	23.3%	10%
Yellow Time (s)	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
Lead/Lag	Lead	Lag		Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	C-Max	C-Max	C-Max	None
v/c Ratio	0.61	0.10	0.27	0.70	0.59	0.04	0.14	0.35	
Control Delay	42.2	19.5	2.2	37.9	34.9	13.5	31.2	7.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	42.2	19.5	2.2	37.9	34.9	13.5	31.2	7.2	
Queue Length 50th (ft)	199	48	13	120	107	12	31	0	
Queue Length 95th (ft)	247	m65	m84	163	160	31	67	54	
Internal Link Dist (ft)		146		432		103	80		
Turn Bay Length (ft)									
Base Capacity (vph)	725	1492	1174	747	759	929	453	526	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.09	0.27	0.57	0.56	0.04	0.14	0.35	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

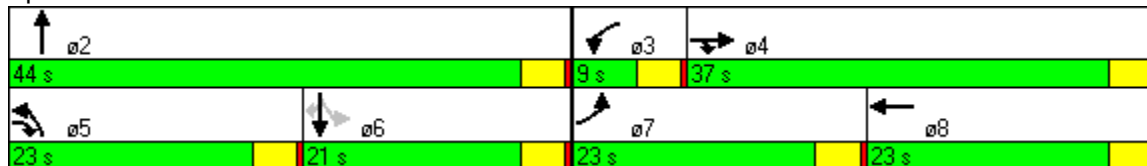
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated





















m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: KAONOULU STREET & DRIVE A















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

5/30/2014

												
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	274	16	39	267	98	9	8	34	120	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	298	17	42	290	107	10	9	37	130	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)					333							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	397			315			783	868	307	848	824	343
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	343			315			763	857	307	834	808	285
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			97			96	97	95	44	96	98
cM capacity (veh/h)	1117			1245			265	252	733	231	269	692
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	40	315	42	397	10	46	130	26				
Volume Left	40	0	42	0	10	0	130	0				
Volume Right	0	17	0	107	0	37	0	15				
cSH	1117	1700	1245	1700	265	538	231	418				
Volume to Capacity	0.04	0.19	0.03	0.23	0.04	0.08	0.56	0.06				
Queue Length 95th (ft)	3	0	3	0	3	7	78	5				
Control Delay (s)	8.3	0.0	8.0	0.0	19.1	12.3	39.0	14.2				
Lane LOS	A		A		C	B	E	B				
Approach Delay (s)	0.9		0.8		13.5		34.8					
Approach LOS					B		D					
Intersection Summary												
Average Delay			6.8									
Intersection Capacity Utilization			46.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

5/30/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	82	319	16	2	287	6	2	1	3	3	1	58
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)	89	347	17	2	312	7	2	1	3	3	1	63
Approach Volume (veh/h)		453			321			7			67	
Crossing Volume (veh/h)		7			92			439			316	
High Capacity (veh/h)		1378			1288			980			1080	
High v/c (veh/h)		0.33			0.25			0.01			0.06	
Low Capacity (veh/h)		1155			1074			796			886	
Low v/c (veh/h)		0.39			0.30			0.01			0.08	
Intersection Summary												
Maximum v/c High			0.33									
Maximum v/c Low			0.39									
Intersection Capacity Utilization			35.0%		ICU Level of Service					A		







HCM Unsignalized Intersection Capacity Analysis
 13: KAONOULU STREET & DRIVE B SOUTH

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	791	311	0	1177	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	860	338	0	1279	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		0.91	0.98
vC, conflicting volume			1198		1499	430
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1185		1394	404
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)			576		120	586
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	430	430	338	640	640	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	338	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.25	0.20	0.38	0.38	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			35.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: KAONOULU STREET & DRIVE B NORTH

5/30/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	791	950	0	0	227
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	860	1033	0	0	247
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	1033				1462	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	918				1375	340
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	58
cM capacity (veh/h)	661				123	586
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	430	430	516	516	0	247
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	247
cSH	1700	1700	1700	1700	1700	586
Volume to Capacity	0.25	0.25	0.30	0.30	0.00	0.42
Queue Length 95th (ft)	0	0	0	0	0	52
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	15.5
Lane LOS						C
Approach Delay (s)	0.0		0.0			15.5
Approach LOS						C
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			47.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: KAONOULU STREET & DRIVE C

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↖	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	20	109	0	40	350	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	118	0	43	380	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			140		43	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		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		60	100
cM capacity (veh/h)			1441		962	1050
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	22	118	0	22	22	380
Volume Left	0	0	0	0	0	380
Volume Right	0	118	0	0	0	0
cSH	1700	1700	1700	1700	1700	962
Volume to Capacity	0.01	0.07	0.00	0.01	0.01	0.40
Queue Length 95th (ft)	0	0	0	0	0	48
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.2
Lane LOS						B
Approach Delay (s)	0.0		0.0			11.2
Approach LOS						B
Intersection Summary						
Average Delay			7.5			
Intersection Capacity Utilization			29.4%		ICU Level of Service	A
Analysis Period (min)			15			

























HCM Unsignalized Intersection Capacity Analysis
 16: KAONOULU STREET & DRIVE D

5/30/2014

	→	↘	↙	←	↖	↗
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			

























HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1740	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.97	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1740	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	177	45	191	121	62	37	86	1297	150	95	1412	105
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)	192	49	208	132	67	40	93	1410	163	103	1535	114
RTOR Reduction (vph)	0	0	129	0	0	37	0	0	77	0	0	52
Lane Group Flow (vph)	117	124	79	97	102	3	93	1410	86	103	1535	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)	10.3	10.3	10.3	5.2	5.2	5.2	4.5	44.5	44.5	6.0	46.0	46.0
Effective Green, g (s)	11.3	11.3	11.3	6.2	6.2	6.2	5.5	45.5	45.5	7.0	47.0	47.0
Actuated g/C Ratio	0.13	0.13	0.13	0.07	0.07	0.07	0.06	0.53	0.53	0.08	0.55	0.55
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)	221	226	208	121	125	114	113	1872	838	279	1934	865
v/s Ratio Prot	0.07	0.07		0.06	c0.06		c0.05	0.40		0.03	c0.43	
v/s Ratio Perm			0.13			0.03			0.10			0.07
v/c Ratio	0.53	0.55	0.38	0.80	0.82	0.03	0.82	0.75	0.10	0.37	0.79	0.07
Uniform Delay, d1	34.9	35.0	34.2	39.3	39.3	37.1	39.8	15.9	10.1	37.4	15.6	9.2
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	2.6	3.0	1.4	30.5	32.0	0.1	34.8	2.1	0.1	0.3	2.7	0.1
Delay (s)	37.5	38.0	35.5	69.8	71.4	37.2	74.6	18.0	10.2	37.7	18.3	9.3
Level of Service	D	D	D	E	E	D	E	B	B	D	B	A
Approach Delay (s)		36.7			65.0			20.4			18.9	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM Average Control Delay			24.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			86.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			66.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

												
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	0.73	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1359	1863	1583	1394	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	60	13	110	96	39	51	73	1331	108	68	1596	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	14	120	104	42	55	79	1447	117	74	1735	53
RTOR Reduction (vph)	0	0	104	0	0	47	0	0	41	0	0	19
Lane Group Flow (vph)	65	14	16	104	42	8	79	1447	76	74	1735	34
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)	11.3	11.3	11.3	11.3	11.3	11.3	6.2	57.7	57.7	6.1	57.6	57.6
Effective Green, g (s)	12.3	12.3	12.3	12.3	12.3	12.3	7.2	58.7	58.7	7.1	58.6	58.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.08	0.65	0.65	0.08	0.65	0.65
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)	186	254	216	190	254	216	141	2306	1031	139	2302	1030
v/s Ratio Prot		0.01			0.02		c0.04	0.41		0.04	c0.49	
v/s Ratio Perm	0.05		0.08	0.07		0.03			0.07			0.03
v/c Ratio	0.35	0.06	0.08	0.55	0.17	0.03	0.56	0.63	0.07	0.53	0.75	0.03
Uniform Delay, d1	35.3	33.8	33.9	36.3	34.4	33.7	39.9	9.3	5.7	39.9	10.8	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	1.6	0.1	0.2	4.0	0.4	0.1	3.0	0.8	0.1	2.0	1.7	0.0
Delay (s)	36.8	34.0	34.1	40.3	34.8	33.8	42.9	10.0	5.8	41.9	12.5	5.7
Level of Service	D	C	C	D	C	C	D	B	A	D	B	A
Approach Delay (s)		35.0			37.4			11.3			13.5	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			14.9				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			90.1				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			70.3%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

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	436	1	0	2	179	1065	4	6	1251	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	474	1	0	2	195	1158	4	7	1360	171
RTOR Reduction (vph)	0	0	181	0	2	0	0	0	0	0	0	83
Lane Group Flow (vph)	101	101	293	0	1	0	195	1162	0	7	1360	88
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	23.9		0.8		10.8	49.1		0.8	39.1	39.1
Effective Green, g (s)	9.1	9.1	23.9		2.8		10.8	51.1		0.8	41.1	41.1
Actuated g/C Ratio	0.11	0.11	0.30		0.04		0.14	0.64		0.01	0.52	0.52
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)	192	192	835		58		465	2265		18	1823	815
v/s Ratio Prot	0.06	0.06			c0.00		0.06	0.33		0.00	c0.38	
v/s Ratio Perm			0.17									0.11
v/c Ratio	0.53	0.53	0.35		0.02		0.42	0.51		0.39	0.75	0.11
Uniform Delay, d1	33.3	33.3	21.9		37.2		31.6	7.7		39.3	15.2	9.9
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.6	2.6	0.1		0.1		0.2	0.3		5.0	1.9	0.1
Delay (s)	35.9	35.9	22.0		37.3		31.8	8.0		44.3	17.2	10.0
Level of Service	D	D	C		D		C	A		D	B	B
Approach Delay (s)		26.1			37.3			11.4			16.5	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM Average Control Delay			16.4				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			79.8				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			64.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												
































HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
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)	396	443	129	389	347	141
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	482	140	423	377	153
RTOR Reduction (vph)	0	272	0	0	0	0
Lane Group Flow (vph)	430	210	140	423	377	153
Turn Type		Perm	Prot		custom	
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	25.3	25.3	9.5	38.8	11.6	61.4
Effective Green, g (s)	26.8	26.8	9.5	40.3	13.1	61.4
Actuated g/C Ratio	0.44	0.44	0.15	0.66	0.21	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)	813	691	274	2323	732	1583
v/s Ratio Prot	0.23		c0.08	0.12	c0.11	
v/s Ratio Perm		0.30				0.10
v/c Ratio	0.53	0.30	0.51	0.18	0.52	0.10
Uniform Delay, d1	12.7	11.2	23.8	4.1	21.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.7	0.1	0.3	0.0
Delay (s)	13.9	11.8	24.5	4.2	21.6	0.0
Level of Service	B	B	C	A	C	A
Approach Delay (s)	12.8			9.2	15.4	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			12.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			61.4		Sum of lost time (s)	12.0
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014













												
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)	74	226	170	619	204	601	129	810	634	673	924	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)	80	246	185	673	222	653	140	880	689	732	1004	127
RTOR Reduction (vph)	0	0	21	0	0	164	0	0	28	0	0	77
Lane Group Flow (vph)	80	246	164	673	222	489	140	880	661	732	1004	50
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)	8.0	10.5	20.1	19.0	21.5	42.5	9.6	23.9	42.9	21.0	35.3	35.3
Effective Green, g (s)	8.0	10.5	20.1	19.0	21.5	42.5	9.6	23.9	42.9	21.0	35.3	35.3
Actuated g/C Ratio	0.09	0.12	0.22	0.21	0.24	0.47	0.11	0.26	0.47	0.23	0.39	0.39
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)	157	411	422	722	443	1434	188	936	1446	797	1382	618
v/s Ratio Prot	0.05	0.07	0.05	c0.20	0.12	c0.11	0.08	c0.25	0.10	c0.21	0.28	
v/s Ratio Perm			0.07			0.13			0.15			0.08
v/c Ratio	0.51	0.60	0.39	0.93	0.50	0.34	0.74	0.94	0.46	0.92	0.73	0.08
Uniform Delay, d1	39.3	37.9	29.9	35.1	29.8	15.1	39.2	32.6	15.9	33.9	23.4	17.3
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	2.6	2.3	0.6	18.8	0.9	0.1	14.8	16.8	0.2	15.4	1.9	0.1
Delay (s)	41.9	40.3	30.5	53.9	30.7	15.3	54.0	49.4	16.2	49.2	25.4	17.4
Level of Service	D	D	C	D	C	B	D	D	B	D	C	B
Approach Delay (s)		37.0			34.3			36.4			34.2	
Approach LOS		D			C			D			C	

Intersection Summary

HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014

						
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	676	1863
Volume (vph)	200	116	536	224	145	455
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	126	583	243	158	495
RTOR Reduction (vph)	0	97	0	102	0	0
Lane Group Flow (vph)	217	29	583	141	158	495
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	9.7	9.7	24.3	24.3	24.3	24.3
Effective Green, g (s)	9.7	9.7	24.3	24.3	24.3	24.3
Actuated g/C Ratio	0.23	0.23	0.58	0.58	0.58	0.58
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)	409	366	1078	916	391	1078
v/s Ratio Prot	c0.12		c0.31			0.27
v/s Ratio Perm		0.08		0.15	0.23	
v/c Ratio	0.53	0.08	0.54	0.15	0.40	0.46
Uniform Delay, d1	14.2	12.7	5.4	4.1	4.9	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.1	0.6	0.1	0.7	0.3
Delay (s)	15.5	12.7	6.0	4.2	5.6	5.4
Level of Service	B	B	A	A	A	A
Approach Delay (s)	14.5		5.5			5.4
Approach LOS	B		A			A
Intersection Summary						
HCM Average Control Delay			7.1		HCM Level of Service	A
HCM Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			42.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			57.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

												
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)	87	0	81	0	0	0	35	1583	0	0	1504	105
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)	95	0	88	0	0	0	38	1721	0	0	1635	114
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	95	10	0	0	0	38	1721	0	0	1635	79
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)		10.3	10.3				4.3	68.8			60.5	60.5
Effective Green, g (s)		10.3	10.3				4.3	68.8			60.5	60.5
Actuated g/C Ratio		0.12	0.12				0.05	0.79			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)		167	187				87	2795			2458	1100
v/s Ratio Prot							0.02	c0.49			c0.46	
v/s Ratio Perm		c0.07	0.06									0.07
v/c Ratio		0.57	0.06				0.44	0.62			0.67	0.07
Uniform Delay, d1		36.3	34.1				40.2	3.7			7.6	4.3
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		4.4	0.1				3.5	0.4			0.7	0.0
Delay (s)		40.7	34.2				43.7	4.2			8.2	4.3
Level of Service		D	C				D	A			A	A
Approach Delay (s)		37.6			0.0			5.0			8.0	
Approach LOS		D			A			A			A	
Intersection Summary												
HCM Average Control Delay			8.0		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			87.1		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			55.2%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

						
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)	418	255	214	1303	1258	472
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	454	277	233	1416	1367	513
RTOR Reduction (vph)	0	197	0	0	0	291
Lane Group Flow (vph)	454	80	233	1416	1367	222
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.0	26.0	13.0	56.0	39.0	39.0
Effective Green, g (s)	26.0	26.0	13.0	56.0	39.0	39.0
Actuated g/C Ratio	0.29	0.29	0.14	0.62	0.43	0.43
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	511	457	256	2202	1534	686
v/s Ratio Prot	c0.26		c0.13	0.40	c0.39	
v/s Ratio Perm		0.17				0.32
v/c Ratio	0.89	0.18	0.91	0.64	0.89	0.32
Uniform Delay, d1	30.6	24.0	37.9	10.7	23.5	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.0	0.8	37.1	1.5	8.2	1.3
Delay (s)	50.7	24.8	75.1	12.2	31.8	18.1
Level of Service	D	C	E	B	C	B
Approach Delay (s)	40.9			21.1	28.0	
Approach LOS	D			C	C	
Intersection Summary						
HCM Average Control Delay			27.5		HCM Level of Service	C
HCM Volume to Capacity ratio			0.89			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			79.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433	1863			1863	1583
Volume (vph)	414	199	442	0	518	0	518	60	0	0	55	170
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)	450	216	480	0	563	0	563	65	0	0	60	185
RTOR Reduction (vph)	0	0	278	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	450	216	202	0	563	0	563	65	0	0	60	44
Turn Type	Prot		Prot	Prot			Prot			Prot		Perm
Protected Phases	7	4	4	3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	15.6	37.9	37.9		18.3		18.8	44.1			21.3	21.3
Effective Green, g (s)	15.6	37.9	37.9		18.3		18.8	44.1			21.3	21.3
Actuated g/C Ratio	0.17	0.42	0.42		0.20		0.21	0.49			0.24	0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	595	1490	667		720		717	913			441	375
v/s Ratio Prot	0.13	0.06	c0.30		0.16		c0.16	0.03			0.03	
v/s Ratio Perm												0.12
v/c Ratio	0.76	0.14	0.30		0.78		0.79	0.07			0.14	0.12
Uniform Delay, d1	35.4	16.1	17.3		34.0		33.7	12.1			27.1	27.0
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.5	0.0	0.3		5.5		5.7	0.2			0.6	0.6
Delay (s)	40.8	16.1	17.5		39.5		39.3	12.3			27.7	27.6
Level of Service	D	B	B		D		D	B			C	C
Approach Delay (s)		26.4			39.5			36.5			27.6	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM Average Control Delay			31.8				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			57.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	45	191	121	62	37	86	1297	150	95	1412	105
Lane Group Flow (vph)	117	124	208	97	102	40	93	1410	163	103	1535	114
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)	15.0	15.0	15.0	12.0	12.0	12.0	11.0	50.0	50.0	13.0	52.0	52.0
Total Split (%)	16.7%	16.7%	16.7%	13.3%	13.3%	13.3%	12.2%	55.6%	55.6%	14.4%	57.8%	57.8%
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	0.52	0.53	0.61	0.64	0.65	0.22	0.66	0.73	0.17	0.29	0.77	0.12
Control Delay	46.0	46.4	21.3	58.0	57.8	15.8	61.5	19.0	2.5	39.6	19.0	2.5
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	46.0	46.4	21.3	58.0	57.8	15.8	61.5	19.0	2.5	39.6	19.0	2.5
Queue Length 50th (ft)	67	71	32	56	60	0	53	325	0	28	356	0
Queue Length 95th (ft)	#127	#140	103	#131	#136	30	#126	415	29	53	455	24
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	227	232	342	157	163	185	146	1948	945	361	2017	951
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	0.53	0.61	0.62	0.63	0.22	0.64	0.72	0.17	0.29	0.76	0.12

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.7

Natural Cycle: 75

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	13	110	96	39	51	73	1331	108	68	1596	49
Lane Group Flow (vph)	65	14	120	104	42	55	79	1447	117	74	1735	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)	18.0	18.0	18.0	18.0	18.0	18.0	13.0	59.0	59.0	13.0	59.0	59.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	14.4%	65.6%	65.6%	14.4%	65.6%	65.6%
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							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	0.35	0.05	0.37	0.54	0.16	0.21	0.49	0.62	0.11	0.47	0.75	0.05
Control Delay	38.4	33.0	9.8	42.7	34.4	11.5	46.9	11.5	1.7	45.9	14.2	2.2
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	38.4	33.0	9.8	42.7	34.4	11.5	46.9	11.5	1.7	45.9	14.2	2.2
Queue Length 50th (ft)	33	7	0	55	21	0	43	258	0	40	360	0
Queue Length 95th (ft)	72	24	47	106	50	32	88	331	19	84	461	13
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	210	288	346	215	288	291	174	2329	1082	174	2327	1059
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	0.05	0.35	0.48	0.15	0.19	0.45	0.62	0.11	0.43	0.75	0.05

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	186	0	436	0	179	1065	6	1251	157
Lane Group Flow (vph)	101	101	474	3	195	1162	7	1360	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	0.47	0.47	0.43	0.02	0.38	0.46	0.06	0.73	0.19
Control Delay	39.7	39.7	9.6	29.3	29.2	6.1	38.5	16.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	39.7	9.6	29.3	29.2	6.1	38.5	16.6	2.5
Queue Length 50th (ft)	41	41	35	0	37	70	3	202	0
Queue Length 95th (ft)	#127	#127	100	9	84	252	18	415	31
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	214	214	1336	148	920	2559	113	1865	915
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	0.47	0.47	0.35	0.02	0.21	0.45	0.06	0.73	0.19

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 71.6

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	396	443	129	389	347	141
Lane Group Flow (vph)	430	482	140	423	377	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)	40.1	40.1	24.0	64.1	25.9	90.0
Total Split (%)	44.6%	44.6%	26.7%	71.2%	28.8%	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	0.54	0.51	0.52	0.18	0.52	0.10
Control Delay	15.8	3.1	29.6	4.5	25.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	3.1	29.6	4.5	25.0	0.1
Queue Length 50th (ft)	109	0	51	26	68	0
Queue Length 95th (ft)	246	53	120	54	128	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	955	1047	504	2618	1097	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	0.45	0.46	0.28	0.16	0.34	0.10

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 62.3
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated

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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	226	170	619	204	601	129	810	634	673	924	117
Lane Group Flow (vph)	80	246	185	673	222	653	140	880	689	732	1004	127
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)	16.0	14.0	14.0	23.0	21.0	25.0	14.0	28.0	23.0	25.0	39.0	39.0
Total Split (%)	17.8%	15.6%	15.6%	25.6%	23.3%	27.8%	15.6%	31.1%	25.6%	27.8%	43.3%	43.3%
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	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	Min	None	None	Min	Min
v/c Ratio	0.45	0.65	0.43	0.92	0.50	0.41	0.74	0.93	0.46	0.91	0.72	0.18
Control Delay	41.8	45.9	27.0	55.0	35.8	8.1	59.7	49.5	13.6	50.5	26.7	4.1
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	41.8	45.9	27.0	55.0	35.8	8.1	59.7	49.5	13.6	50.5	26.7	4.1
Queue Length 50th (ft)	43	71	73	194	113	60	78	256	121	209	251	0
Queue Length 95th (ft)	86	111	135	#300	193	111	#166	#376	170	#314	325	34
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	226	394	422	729	447	1596	197	948	1485	805	1395	701
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	0.35	0.62	0.44	0.92	0.50	0.41	0.71	0.93	0.46	0.91	0.72	0.18

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.5

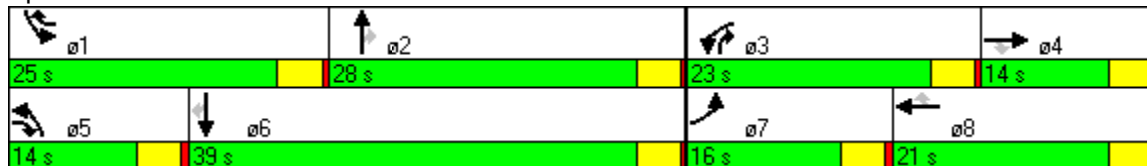
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: KAONOULU STREET & PIILANI HIGHWAY



Queues

6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	200	116	536	224	145	455
Lane Group Flow (vph)	217	126	583	243	158	495
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	25.0	25.0	25.0	25.0
Total Split (%)	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
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	0.49	0.26	0.53	0.23	0.50	0.45
Control Delay	12.6	3.7	8.8	1.8	16.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.7	8.8	1.8	16.1	7.9
Queue Length 50th (ft)	32	0	67	0	18	53
Queue Length 95th (ft)	80	24	186	25	#103	148
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	609	627	1160	1077	332	1160
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	0.36	0.20	0.50	0.23	0.48	0.43

Intersection Summary

Cycle Length: 45
 Actuated Cycle Length: 41.9
 Natural Cycle: 50
 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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

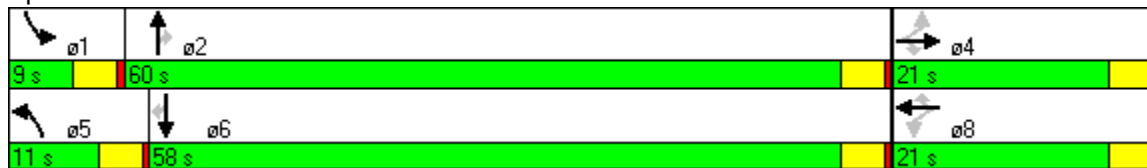
5/30/2014

								ø1	ø8
Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR		
Lane Configurations									
Volume (vph)	87	0	81	35	1583	1504	105		
Lane Group Flow (vph)	0	95	88	38	1721	1635	114		
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)	21.0	21.0	21.0	11.0	60.0	58.0	58.0	9.0	21.0
Total Split (%)	23.3%	23.3%	23.3%	12.2%	66.7%	64.4%	64.4%	10%	23%
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		0.52	0.31	0.28	0.61	0.65	0.10		
Control Delay		33.9	9.1	40.7	5.5	10.2	1.7		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		33.9	9.1	40.7	5.5	10.2	1.7		
Queue Length 50th (ft)		42	0	17	151	258	0		
Queue Length 95th (ft)		94	39	51	284	413	19		
Internal Link Dist (ft)		212			1953	2017			
Turn Bay Length (ft)									
Base Capacity (vph)		271	376	145	2850	2590	1189		
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		0.35	0.23	0.26	0.60	0.63	0.10		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 85.4
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated

Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	418	255	214	1303	1258	472
Lane Group Flow (vph)	454	277	233	1416	1367	513
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)	30.0	30.0	17.0	60.0	43.0	43.0
Total Split (%)	33.3%	33.3%	18.9%	66.7%	47.8%	47.8%
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	0.89	0.42	0.91	0.64	0.89	0.53
Control Delay	52.2	5.4	77.3	12.4	32.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	5.4	77.3	12.4	32.5	3.7
Queue Length 50th (ft)	246	0	132	242	366	0
Queue Length 95th (ft)	#421	56	#269	308	#509	56
Internal Link Dist (ft)	620			1070	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	511	654	256	2202	1534	977
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	0.89	0.42	0.91	0.64	0.89	0.53

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

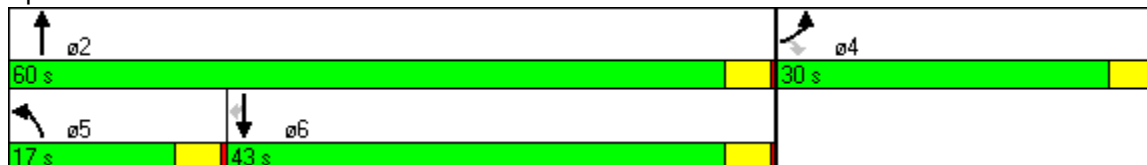
Natural Cycle: 80

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



Queues

12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

									ø1	ø3
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR		
Lane Configurations										
Volume (vph)	414	199	442	518	518	60	55	170		
Lane Group Flow (vph)	450	216	480	563	563	65	60	185		
Turn Type	Prot		Prot		Prot			Perm		
Protected Phases	7	4	4	8	5	2	6		1	3
Permitted Phases								6		
Detector Phases	7	4	4	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	20.0	8.0	20.0	20.0	20.0	8.0	8.0
Total Split (s)	21.0	37.0	37.0	24.0	25.0	37.0	20.0	20.0	8.0	8.0
Total Split (%)	23.3%	41.1%	41.1%	26.7%	27.8%	41.1%	22.2%	22.2%	9%	9%
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	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.76	0.15	0.51	0.78	0.78	0.07	0.14	0.36		
Control Delay	41.4	15.6	3.5	39.4	38.6	13.9	31.7	7.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	41.4	15.6	3.5	39.4	38.6	13.9	31.7	7.4		
Queue Length 50th (ft)	124	36	0	156	153	20	29	0		
Queue Length 95th (ft)	175	57	52	214	208	43	64	55		
Internal Link Dist (ft)		86		399		103	80			
Turn Bay Length (ft)										
Base Capacity (vph)	648	1508	950	788	801	914	441	516		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.69	0.14	0.51	0.71	0.70	0.07	0.14	0.36		

Intersection Summary

Cycle Length: 90

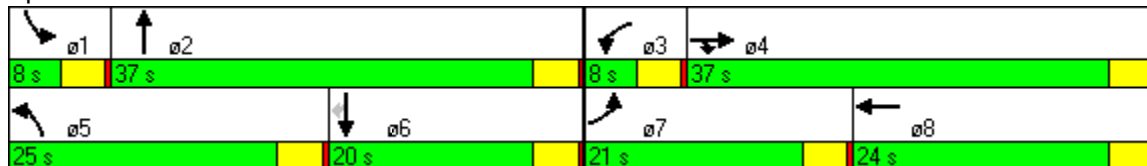
Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70





















Control Type: Actuated-Coordinated

Splits and Phases: 12: UPCOUNTRY HIGHWAY & DRIVE A















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

5/30/2014

												
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	326	11	25	308	81	9	9	28	118	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	354	12	27	335	88	10	10	30	128	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)					333							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	423			366			823	890	360	875	852	379
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	376			366			808	881	360	865	840	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 %	98			98			96	96	96	43	98	97
cM capacity (veh/h)	1094			1192			255	252	684	227	266	659
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	26	366	27	423	10	40	128	24				
Volume Left	26	0	27	0	10	0	128	0				
Volume Right	0	12	0	88	0	30	0	18				
cSH	1094	1700	1192	1700	255	483	227	494				
Volume to Capacity	0.02	0.22	0.02	0.25	0.04	0.08	0.57	0.05				
Queue Length 95th (ft)	2	0	2	0	3	7	78	4				
Control Delay (s)	8.4	0.0	8.1	0.0	19.7	13.1	39.7	12.7				
Lane LOS	A		A		C	B	E	B				
Approach Delay (s)	0.6		0.5		14.4		35.5					
Approach LOS					B		E					
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization			41.0%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

5/30/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	70	363	10	6	332	8	5	4	7	7	3	90
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)	76	395	11	7	361	9	5	4	8	8	3	98
Approach Volume (veh/h)		482			376			17			109	
Crossing Volume (veh/h)		17			86			478			373	
High Capacity (veh/h)		1366			1295			950			1033	
High v/c (veh/h)		0.35			0.29			0.02			0.11	
Low Capacity (veh/h)		1144			1080			769			843	
Low v/c (veh/h)		0.42			0.35			0.02			0.13	
Intersection Summary												
Maximum v/c High			0.35									
Maximum v/c Low			0.42									
Intersection Capacity Utilization			39.4%			ICU Level of Service					A	







HCM Unsignalized Intersection Capacity Analysis
 13: UPCOUNTRY HIGHWAY & DRIVE B SOUTH

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1056	479	0	1415	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1148	521	0	1538	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					0.86	
vC, conflicting volume			1668		1917	574
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1668		1903	574
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)			381		52	462
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	574	574	521	769	769	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	521	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.34	0.31	0.45	0.45	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			42.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: UPCOUNTRY HIGHWAY & DRIVE B NORTH

5/30/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1056	1206	0	0	219
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1148	1311	0	0	238
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	0.85				0.85	0.85
vC, conflicting volume	1311				1885	655
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1191				1865	422
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	52
cM capacity (veh/h)	496				55	494
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	574	574	655	655	0	238
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	238
cSH	1700	1700	1700	1700	1700	494
Volume to Capacity	0.34	0.34	0.39	0.39	0.00	0.48
Queue Length 95th (ft)	0	0	0	0	0	64
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	18.9
Lane LOS						C
Approach Delay (s)	0.0		0.0			18.9
Approach LOS						C
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			53.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: UPCOUNTRY HIGHWAY & DRIVE C

5/30/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↖	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	31	168	0	62	456	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	183	0	67	496	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			216		67	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			216		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		47	100
cM capacity (veh/h)			1351		930	1032
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	34	183	0	34	34	496
Volume Left	0	0	0	0	0	496
Volume Right	0	183	0	0	0	0
cSH	1700	1700	1700	1700	1700	930
Volume to Capacity	0.02	0.11	0.00	0.02	0.02	0.53
Queue Length 95th (ft)	0	0	0	0	0	81
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.2
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.2
Approach LOS						B
Intersection Summary						
Average Delay			8.4			
Intersection Capacity Utilization			35.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 16: UPCOUNTRY HIGHWAY & DRIVE D

5/30/2014

	→	↘	↙	←	↖	↗
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 F
Level-of-Service Worksheets for With Promenade With Honuaula
Conditions

HCM Signalized Intersection Capacity Analysis
1: OHUKAI STREET & PIILANI HIGHWAY

6/24/2014

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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1681	1709	1583	1770	3539	1583	3433	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)	1681	1770	1583	1681	1709	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	93	88	95	227	40	177	38	1226	53	167	1602	77
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)	101	96	103	247	43	192	41	1333	58	182	1741	84
RTOR Reduction (vph)	0	0	89	0	0	166	0	0	23	0	0	25
Lane Group Flow (vph)	101	96	14	141	149	26	41	1333	35	182	1741	59
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)	15.4	15.4	15.4	15.7	15.7	15.7	8.1	60.6	60.6	13.3	65.8	65.8
Effective Green, g (s)	16.4	16.4	16.4	16.7	16.7	16.7	9.1	61.6	61.6	14.3	66.8	66.8
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.07	0.49	0.49	0.11	0.53	0.53
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)	221	232	208	225	228	211	129	1744	780	393	1891	846
v/s Ratio Prot	0.06	0.05		0.08	0.09		0.02	0.38		c0.05	c0.49	
v/s Ratio Perm			0.07			0.12			0.04			0.05
v/c Ratio	0.46	0.41	0.06	0.63	0.65	0.12	0.32	0.76	0.04	0.46	0.92	0.07
Uniform Delay, d1	50.2	49.9	47.6	51.2	51.4	47.7	55.0	25.8	16.4	51.8	26.7	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.06	0.61	1.03	1.28	0.67	0.28
Incremental Delay, d2	1.5	1.2	0.1	5.4	6.6	0.3	0.5	3.0	0.1	0.3	7.9	0.1
Delay (s)	51.7	51.1	47.7	56.6	58.0	47.9	58.9	18.6	17.1	66.4	25.8	4.1
Level of Service	D	D	D	E	E	D	E	B	B	E	C	A
Approach Delay (s)		50.1			53.6			19.7			28.6	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM Average Control Delay			29.9				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			76.6%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

6/24/2014

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	0.74	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1374	1863	1583	1389	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	138	17	122	86	28	106	30	1424	68	34	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	18	133	93	30	115	33	1548	74	37	1522	23
RTOR Reduction (vph)	0	0	111	0	0	96	0	0	23	0	0	7
Lane Group Flow (vph)	150	18	22	93	30	19	33	1548	51	37	1522	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)	19.6	19.6	19.6	19.6	19.6	19.6	6.0	84.4	84.4	6.0	84.4	84.4
Effective Green, g (s)	20.6	20.6	20.6	20.6	20.6	20.6	7.0	85.4	85.4	7.0	85.4	85.4
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.68	0.68	0.06	0.68	0.68
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)	226	307	261	229	307	261	99	2418	1082	99	2418	1082
v/s Ratio Prot		0.01			0.02		0.02	c0.44		c0.02	0.43	
v/s Ratio Perm	c0.11		0.08	0.07		0.07			0.05			0.01
v/c Ratio	0.66	0.06	0.08	0.41	0.10	0.07	0.33	0.64	0.05	0.37	0.63	0.01
Uniform Delay, d1	49.0	44.0	44.2	46.7	44.3	44.1	56.8	11.1	6.5	56.9	11.0	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.56	1.93	4.05	0.79	1.96	2.51
Incremental Delay, d2	7.8	0.1	0.2	1.6	0.2	0.2	0.5	0.9	0.1	0.7	1.0	0.0
Delay (s)	56.8	44.1	44.4	48.3	44.5	44.3	32.5	22.5	26.3	45.5	22.6	15.9
Level of Service	E	D	D	D	D	D	C	C	C	D	C	B
Approach Delay (s)		50.6			45.9			22.9			23.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			66.0%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/24/2014

												
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	349	14	2	4	408	1250	8	3	1169	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	379	15	2	4	443	1359	9	3	1271	120
RTOR Reduction (vph)	0	0	121	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	122	129	258	0	17	0	443	1368	0	3	1271	69
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)	13.8	13.8	41.0		3.6		21.2	84.6		1.0	63.9	63.9
Effective Green, g (s)	15.8	15.8	41.5		5.6		21.7	86.6		1.0	65.9	65.9
Actuated g/C Ratio	0.13	0.13	0.33		0.04		0.17	0.69		0.01	0.53	0.53
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)	212	215	925		78		596	2450		14	1866	835
v/s Ratio Prot	0.07	c0.08			c0.01		c0.13	0.39		0.00	c0.36	
v/s Ratio Perm			0.14									0.08
v/c Ratio	0.58	0.60	0.28		0.22		0.74	0.56		0.21	0.68	0.08
Uniform Delay, d1	51.4	51.6	30.7		57.6		49.0	9.6		61.6	21.8	14.6
Progression Factor	1.07	1.07	1.76		1.00		0.82	1.87		1.00	1.00	1.00
Incremental Delay, d2	3.7	4.4	0.2		1.4		4.1	0.7		2.8	2.0	0.2
Delay (s)	58.9	59.8	54.4		59.0		44.5	18.7		64.4	23.8	14.8
Level of Service	E	E	D		E		D	B		E	C	B
Approach Delay (s)		56.4			59.0			25.0			23.1	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			29.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			125.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			62.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/24/2014

	→	↘	↙	←	↖	↗
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)	333	281	81	465	431	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	362	305	88	505	468	201
RTOR Reduction (vph)	0	109	0	0	0	0
Lane Group Flow (vph)	362	196	88	505	468	201
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	78.9	78.9	10.5	93.4	20.6	125.0
Effective Green, g (s)	80.4	80.4	10.5	94.9	22.1	125.0
Actuated g/C Ratio	0.64	0.64	0.08	0.76	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)	1198	1018	149	2687	607	1583
v/s Ratio Prot	c0.19		c0.05	0.14	c0.14	
v/s Ratio Perm		0.19				0.13
v/c Ratio	0.30	0.19	0.59	0.19	0.77	0.13
Uniform Delay, d1	9.9	9.1	55.2	4.2	49.0	0.0
Progression Factor	1.00	1.00	1.21	0.22	1.00	1.00
Incremental Delay, d2	0.6	0.4	3.6	0.1	5.5	0.0
Delay (s)	10.5	9.5	70.5	1.1	54.5	0.0
Level of Service	B	A	E	A	D	A
Approach Delay (s)	10.1			11.4	38.2	
Approach LOS	B			B	D	
Intersection Summary						
HCM Average Control Delay			20.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			44.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

6/24/2014

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)	50	73	236	152	75	152	111	1067	145	154	1560	68
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	79	257	165	82	165	121	1160	158	167	1696	74
RTOR Reduction (vph)	0	0	12	0	0	135	0	0	49	0	0	22
Lane Group Flow (vph)	54	79	245	165	82	30	121	1160	109	167	1696	52
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)	7.9	10.9	26.4	8.1	11.1	22.6	15.5	78.5	86.6	11.5	74.5	74.5
Effective Green, g (s)	7.9	10.9	26.4	8.1	11.1	22.6	15.5	78.5	86.6	11.5	74.5	74.5
Actuated g/C Ratio	0.06	0.09	0.21	0.06	0.09	0.18	0.12	0.63	0.69	0.09	0.60	0.60
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)	112	309	385	222	165	593	219	2222	2020	316	2109	943
v/s Ratio Prot	0.03	0.02	c0.08	c0.05	0.04	0.03	0.07	c0.33	0.01	0.05	c0.48	
v/s Ratio Perm			0.08			0.03			0.05			0.05
v/c Ratio	0.48	0.26	0.64	0.74	0.50	0.05	0.55	0.52	0.05	0.53	0.80	0.05
Uniform Delay, d1	56.6	53.3	44.9	57.4	54.3	42.3	51.5	12.9	6.1	54.2	19.6	10.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.70	2.03	5.94	0.75	1.24	2.38
Incremental Delay, d2	3.2	0.4	3.4	12.6	2.3	0.0	2.5	0.7	0.0	0.8	1.8	0.1
Delay (s)	59.8	53.7	48.4	70.0	56.6	42.4	38.6	26.8	36.4	41.3	26.1	25.2
Level of Service	E	D	D	E	E	D	D	C	D	D	C	C
Approach Delay (s)		51.0			56.3			28.9			27.4	
Approach LOS		D			E			C			C	













Intersection Summary

HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

6/24/2014

						
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	695	1863
Volume (vph)	127	70	558	121	62	374
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	76	607	132	67	407
RTOR Reduction (vph)	0	62	0	44	0	0
Lane Group Flow (vph)	138	14	607	88	67	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	10.2	10.2	37.0	37.0	37.0	37.0
Effective Green, g (s)	10.2	10.2	37.0	37.0	37.0	37.0
Actuated g/C Ratio	0.18	0.18	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)	327	293	1249	1061	466	1249
v/s Ratio Prot	c0.08		c0.33			0.22
v/s Ratio Perm		0.05		0.08	0.10	
v/c Ratio	0.42	0.05	0.49	0.08	0.14	0.33
Uniform Delay, d1	19.9	18.5	4.4	3.2	3.3	3.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	0.3	0.0	0.1	0.2
Delay (s)	20.8	18.6	4.7	3.2	3.5	4.0
Level of Service	C	B	A	A	A	A
Approach Delay (s)	20.0		4.5			3.9
Approach LOS	B		A			A
Intersection Summary						
HCM Average Control Delay			6.6		HCM Level of Service	A
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			55.2		Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						















HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

6/24/2014

												
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)		1815	1583		1779	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.76	1.00		0.64	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1409	1583		1201	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	35	32	124	68	5	24	31	1420	123	50	2018	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)	38	35	135	74	5	26	34	1543	134	54	2193	46
RTOR Reduction (vph)	0	0	77	0	0	23	0	0	34	0	0	10
Lane Group Flow (vph)	0	73	58	0	79	3	34	1543	100	54	2193	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)		12.4	12.4		12.4	12.4	4.0	93.6	93.6	7.0	96.6	96.6
Effective Green, g (s)		12.4	12.4		12.4	12.4	4.0	93.6	93.6	7.0	96.6	96.6
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.03	0.75	0.75	0.06	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)		140	157		119	157	57	2650	1185	99	2735	1223
v/s Ratio Prot							0.02	0.44		c0.03	c0.62	
v/s Ratio Perm		0.05	0.09		0.07	0.02			0.08			0.03
v/c Ratio		0.52	0.37		0.66	0.02	0.60	0.58	0.08	0.55	0.80	0.03
Uniform Delay, d1		53.5	52.6		54.3	50.8	59.7	7.0	4.2	57.5	8.5	3.3
Progression Factor		1.00	1.00		1.00	1.00	1.21	1.32	0.71	0.92	1.50	2.31
Incremental Delay, d2		3.5	1.5		13.1	0.0	13.3	0.8	0.1	4.1	1.8	0.0
Delay (s)		57.0	54.1		67.4	50.8	85.6	10.0	3.1	56.9	14.5	7.7
Level of Service		E	D		E	D	F	A	A	E	B	A
Approach Delay (s)		55.1			63.3			11.0			15.4	
Approach LOS		E			E			B			B	
Intersection Summary												
HCM Average Control Delay			16.7				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			77.5%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

6/24/2014

						
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)	308	180	101	1206	1661	416
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	335	196	110	1311	1805	452
RTOR Reduction (vph)	0	114	0	0	0	144
Lane Group Flow (vph)	335	82	110	1311	1805	308
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.5	26.5	10.2	90.5	76.3	76.3
Effective Green, g (s)	26.5	26.5	10.2	90.5	76.3	76.3
Actuated g/C Ratio	0.21	0.21	0.08	0.72	0.61	0.61
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)	375	336	144	2562	2160	966
v/s Ratio Prot	c0.19		c0.06	0.37	c0.51	
v/s Ratio Perm		0.12				0.29
v/c Ratio	0.89	0.24	0.76	0.51	0.84	0.32
Uniform Delay, d1	47.9	40.9	56.2	7.6	19.4	11.8
Progression Factor	1.00	1.00	1.00	1.00	0.86	0.94
Incremental Delay, d2	22.5	0.4	21.1	0.7	2.6	0.5
Delay (s)	70.4	41.3	77.3	8.3	19.3	11.6
Level of Service	E	D	E	A	B	B
Approach Delay (s)	59.7			13.6	17.7	
Approach LOS	E			B	B	
Intersection Summary						
HCM Average Control Delay			21.6		HCM Level of Service	C
HCM Volume to Capacity ratio			0.84			
Actuated Cycle Length (s)			125.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			78.6%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
12: UPCOUNTRY HIGHWAY & DRIVE A

6/24/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.64	1.00	1.00		1.00		0.75	1.00			1.00	1.00
Satd. Flow (perm)	2307	3539	1583		3539		2714	1863			1863	1583
Volume (vph)	131	65	90	0	166	0	67	12	0	0	9	59
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)	142	71	98	0	180	0	73	13	0	0	10	64
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	142	71	39	0	180	0	73	13	0	0	10	26
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			16.0	16.0
Effective Green, g (s)	16.0	16.0	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			0.40	0.40
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0			4.0	4.0
Lane Grp Cap (vph)	923	1416	633		1416		1086	745			745	633
v/s Ratio Prot		0.02			0.05			0.01			0.01	
v/s Ratio Perm	0.06		0.06				0.03					0.04
v/c Ratio	0.15	0.05	0.06		0.13		0.07	0.02			0.01	0.04
Uniform Delay, d1	7.7	7.3	7.4		7.6		7.4	7.3			7.2	7.3
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.4	0.1	0.2		0.2		0.1	0.0			0.0	0.1
Delay (s)	8.0	7.4	7.6		7.8		7.5	7.3			7.3	7.4
Level of Service	A	A	A		A		A	A			A	A
Approach Delay (s)		7.7			7.8			7.5			7.4	
Approach LOS		A			A			A			A	

Intersection Summary

HCM Average Control Delay	7.7	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	26.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

6/24/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	88	95	227	40	177	38	1226	53	167	1602	77
Lane Group Flow (vph)	101	96	103	141	149	192	41	1333	58	182	1741	84
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)	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 (%)	17.6%	17.6%	17.6%	20.0%	20.0%	20.0%	14.4%	46.4%	46.4%	16.0%	48.0%	48.0%
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	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	0.46	0.41	0.35	0.63	0.65	0.51	0.26	0.76	0.07	0.46	0.91	0.10
Control Delay	55.9	54.5	12.0	56.7	57.3	9.8	59.3	19.5	7.7	68.9	26.6	2.4
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	55.9	54.5	12.0	56.7	57.3	9.8	59.3	19.5	7.7	68.9	26.6	2.4
Queue Length 50th (ft)	81	76	0	114	122	0	34	104	1	79	776	1
Queue Length 95th (ft)	141	133	52	182	191	66	m67	350	m24	119	#929	m8
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	242	255	316	282	287	426	198	1743	803	439	1920	883
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	0.42	0.38	0.33	0.50	0.52	0.45	0.21	0.76	0.07	0.41	0.91	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: 135

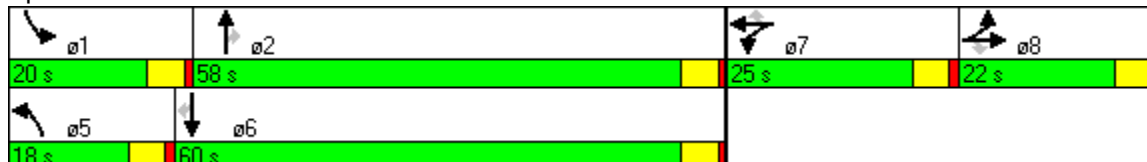
Control Type: Actuated-Coordinated

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

6/24/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	17	122	86	28	106	30	1424	68	34	1400	21
Lane Group Flow (vph)	150	18	133	93	30	115	33	1548	74	37	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	0.66	0.06	0.36	0.41	0.10	0.32	0.21	0.63	0.07	0.24	0.61	0.02
Control Delay	54.8	41.4	8.7	48.4	42.2	9.0	32.4	25.0	9.3	45.2	25.0	9.2
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	54.8	41.4	8.7	48.4	42.2	9.0	32.4	25.0	9.3	45.2	25.0	9.2
Queue Length 50th (ft)	114	12	0	68	21	0	21	565	22	24	643	6
Queue Length 95th (ft)	180	33	54	117	47	50	m34	636	m37	m44	752	m14
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	286	388	435	289	388	420	156	2475	1129	156	2475	1114
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	0.05	0.31	0.32	0.08	0.27	0.21	0.63	0.07	0.24	0.61	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



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

6/24/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	211	20	349	2	408	1250	3	1169	110
Lane Group Flow (vph)	122	129	379	21	443	1368	3	1271	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)	22.0	22.0	50.3	12.0	28.3	82.0	9.0	62.7	62.7
Total Split (%)	17.6%	17.6%	40.2%	9.6%	22.6%	65.6%	7.2%	50.2%	50.2%
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	0.58	0.60	0.36	0.19	0.74	0.52	0.05	0.66	0.13
Control Delay	62.2	63.0	27.5	51.6	44.4	16.9	59.0	24.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	63.0	27.5	51.6	44.4	16.9	59.0	24.4	4.7
Queue Length 50th (ft)	106	112	54	13	194	451	2	428	5
Queue Length 95th (ft)	174	182	156	41	212	619	13	526	39
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	242	245	1085	116	667	2608	71	1933	913
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	0.53	0.35	0.18	0.66	0.52	0.04	0.66	0.13

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: 75

Control Type: Actuated-Coordinated

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

6/24/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	333	281	81	465	431	185
Lane Group Flow (vph)	362	305	88	505	468	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)	52.3	52.3	30.0	82.3	42.7	125.0
Total Split (%)	41.8%	41.8%	24.0%	65.8%	34.2%	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	0.30	0.27	0.59	0.19	0.77	0.13
Control Delay	11.9	2.0	67.3	1.1	49.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.0	67.3	1.1	49.9	0.2
Queue Length 50th (ft)	119	0	75	11	188	0
Queue Length 95th (ft)	219	40	m118	17	233	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1199	1127	368	2687	1063	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	0.30	0.27	0.24	0.19	0.44	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
 m Volume for 95th percentile queue is metered by upstream signal.

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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

6/24/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	73	236	152	75	152	111	1067	145	154	1560	68
Lane Group Flow (vph)	54	79	257	165	82	165	121	1160	158	167	1696	74
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	28.0	16.0	12.0	20.0	14.0	16.0	71.0	12.0	14.0	69.0	69.0
Total Split (%)	16.0%	22.4%	12.8%	9.6%	16.0%	11.2%	12.8%	56.8%	9.6%	11.2%	55.2%	55.2%
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	0.42	0.23	0.66	0.74	0.50	0.23	0.55	0.52	0.08	0.53	0.80	0.08
Control Delay	57.2	50.6	47.8	77.5	57.8	6.0	44.4	29.5	7.4	43.2	27.8	12.6
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	57.2	50.6	47.8	77.5	57.8	6.0	44.4	29.5	7.4	43.2	27.8	12.6
Queue Length 50th (ft)	43	31	177	69	64	0	88	466	18	70	460	14
Queue Length 95th (ft)	84	53	243	#121	115	29	142	580	51	m78	#580	m25
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	227	679	387	223	238	729	220	2246	2081	325	2131	975
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	0.24	0.12	0.66	0.74	0.34	0.23	0.55	0.52	0.08	0.51	0.80	0.08

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: 100

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

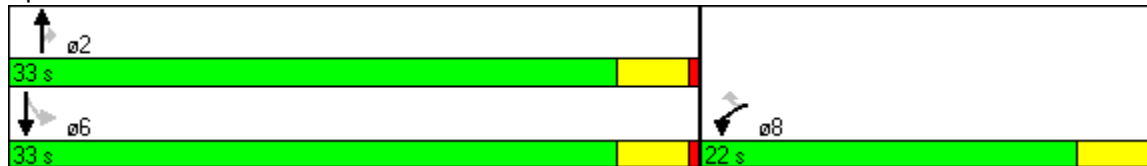


	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	127	70	558	121	62	374
Lane Group Flow (vph)	138	76	607	132	67	407
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phases	8	8	2	2	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	22.0	22.0	33.0	33.0	33.0	33.0
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	0.41	0.21	0.49	0.12	0.18	0.33
Control Delay	13.6	5.1	6.6	1.4	5.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	5.1	6.6	1.4	5.9	5.2
Queue Length 50th (ft)	21	0	62	0	5	36
Queue Length 95th (ft)	70	24	161	15	24	94
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	562	555	1309	1151	389	1309
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	0.25	0.14	0.46	0.11	0.17	0.31

Intersection Summary

Cycle Length: 55
 Actuated Cycle Length: 56.6
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

6/24/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	32	124	68	5	24	31	1420	123	50	2018	42
Lane Group Flow (vph)	0	73	135	0	79	26	34	1543	134	54	2193	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	10.0	92.0	92.0	13.0	95.0	95.0
Total Split (%)	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	8.0%	73.6%	73.6%	10.4%	76.0%	76.0%
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		0.48	0.57		0.64	0.14	0.37	0.58	0.11	0.47	0.79	0.04
Control Delay		57.7	27.0		64.3	18.1	79.2	11.1	0.8	58.5	16.2	3.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		57.7	27.0		64.3	18.1	79.2	11.1	0.8	58.5	16.2	3.2
Queue Length 50th (ft)		56	37		62	0	0	427	1	41	578	1
Queue Length 95th (ft)		104	102		114	28	m52	528	m6	m54	837	m9
Internal Link Dist (ft)		212			349			829			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		195	278		158	225	93	2671	1228	128	2779	1253
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	0.49		0.50	0.12	0.37	0.58	0.11	0.42	0.79	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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

6/24/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	308	180	101	1206	1661	416
Lane Group Flow (vph)	335	196	110	1311	1805	452
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)	33.0	33.0	14.0	92.0	78.0	78.0
Total Split (%)	26.4%	26.4%	11.2%	73.6%	62.4%	62.4%
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	0.89	0.44	0.76	0.51	0.84	0.41
Control Delay	63.9	14.8	85.4	8.7	20.2	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	14.8	85.4	8.7	20.2	3.1
Queue Length 50th (ft)	258	33	89	235	740	39
Queue Length 95th (ft)	#406	102	#189	284	532	m36
Internal Link Dist (ft)	652			1058	2861	
Turn Bay Length (ft)						
Base Capacity (vph)	411	479	147	2562	2161	1111
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	0.82	0.41	0.75	0.51	0.84	0.41

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: 80

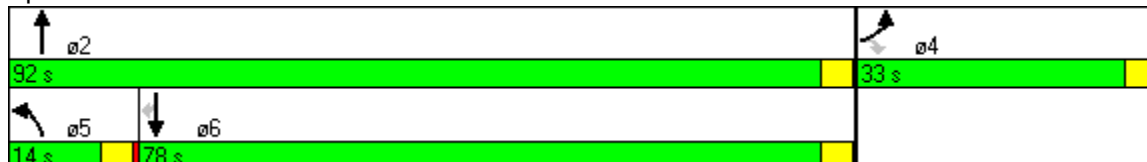
Control Type: Actuated-Coordinated

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



Queues

12: UPCOUNTRY HIGHWAY & DRIVE A

6/24/2014

								
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	131	65	90	166	67	12	9	59
Lane Group Flow (vph)	142	71	98	180	73	13	10	64
Turn Type	Perm		Perm		Perm			Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		4		2			6
Minimum Split (s)	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
Total Split (%)	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
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
v/c Ratio	0.15	0.05	0.14	0.13	0.07	0.02	0.01	0.10
Control Delay	8.3	7.5	3.0	7.9	7.7	7.4	7.3	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.5	3.0	7.9	7.7	7.4	7.3	3.2
Queue Length 50th (ft)	9	4	0	12	4	2	1	0
Queue Length 95th (ft)	21	12	18	25	12	8	7	14
Internal Link Dist (ft)		86		521		103	80	
Turn Bay Length (ft)								
Base Capacity (vph)	922	1416	692	1416	1086	745	745	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.05	0.14	0.13	0.07	0.02	0.01	0.10

Intersection Summary

Cycle Length: 40

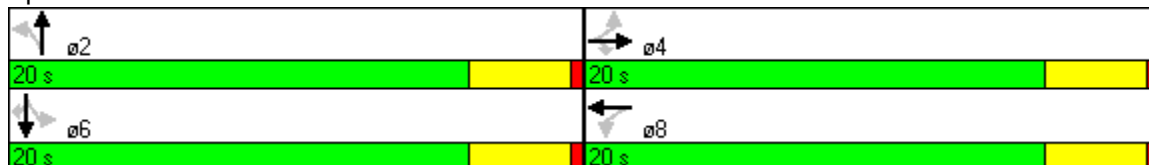
Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 40





















Control Type: Pretimed

Splits and Phases: 12: UPCOUNTRY HIGHWAY & DRIVE A















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

6/24/2014

												
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	160	7	20	174	60	13	6	63	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	174	8	22	189	65	14	7	68	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)					333							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	254			182			477	526	178	561	497	222
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			182			469	518	178	554	488	209
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	54	99	98
cM capacity (veh/h)	1303			1394			472	439	865	387	456	818
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	25	182	22	254	14	75	176	18				
Volume Left	25	0	22	0	14	0	176	0				
Volume Right	0	8	0	65	0	68	0	15				
cSH	1303	1700	1394	1700	472	798	387	717				
Volume to Capacity	0.02	0.11	0.02	0.15	0.03	0.09	0.46	0.03				
Queue Length 95th (ft)	1	0	1	0	2	8	58	2				
Control Delay (s)	7.8	0.0	7.6	0.0	12.9	10.0	21.9	10.2				
Lane LOS	A		A		B	A	C	B				
Approach Delay (s)	0.9		0.6		10.4		20.8					
Approach LOS					B		C					
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			41.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

6/24/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	30	182	13	4	167	2	9	0	2	3	0	66
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)	33	198	14	4	182	2	10	0	2	3	0	72
Approach Volume (veh/h)		245			188			12			75	
Crossing Volume (veh/h)		8			42			234			196	
High Capacity (veh/h)		1376			1340			1153			1188	
High v/c (veh/h)		0.18			0.14			0.01			0.06	
Low Capacity (veh/h)		1154			1120			951			983	
Low v/c (veh/h)		0.21			0.17			0.01			0.08	
Intersection Summary												
Maximum v/c High			0.18									
Maximum v/c Low			0.21									
Intersection Capacity Utilization			28.5%		ICU Level of Service					A		







HCM Unsignalized Intersection Capacity Analysis
 13: UPCOUNTRY HIGHWAY & DRIVE B SOUTH

6/24/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	287	86	0	378	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	312	93	0	411	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			405		517	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			405		517	156
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)			1150		488	862
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	156	156	93	205	205	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	93	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.09	0.09	0.05	0.12	0.12	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			13.8%		ICU Level of Service	A
Analysis Period (min)			15			






















HCM Unsignalized Intersection Capacity Analysis
 14: UPCOUNTRY HIGHWAY & DRIVE B NORTH

6/24/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	287	291	0	0	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	312	316	0	0	95
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	316				472	158
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	316				472	158
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)	1241				521	859
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	156	156	158	158	0	95
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	95
cSH	1700	1700	1700	1700	1700	859
Volume to Capacity	0.09	0.09	0.09	0.09	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	9.7
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.7
Approach LOS						A
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			20.1%		ICU Level of Service	A
Analysis Period (min)			15			









HCM Unsignalized Intersection Capacity Analysis
 15: UPCOUNTRY HIGHWAY & DRIVE C

6/24/2014

												
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)	32	3	32	0	3	0	64	0	0	0	0	99
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)	35	3	35	0	3	0	70	0	0	0	0	108
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)		601										
pX, platoon unblocked												
vC, conflicting volume	3			38			182	76	3	76	111	2
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3			38			182	76	3	76	111	2
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			90	100	100	100	100	90
cM capacity (veh/h)	1617			1570			675	796	1079	890	762	1082
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2		
Volume Total	35	3	35	0	2	1	70	0	0	108		
Volume Left	35	0	0	0	0	0	70	0	0	0		
Volume Right	0	0	35	0	0	0	0	0	0	108		
cSH	1617	1700	1700	1700	1700	1700	675	1700	1700	1082		
Volume to Capacity	0.02	0.00	0.02	0.00	0.00	0.00	0.10	0.00	0.00	0.10		
Queue Length 95th (ft)	2	0	0	0	0	0	9	0	0	8		
Control Delay (s)	7.3	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	8.7		
Lane LOS	A						B	A	A	A		
Approach Delay (s)	3.5			0.0			10.9		8.7			
Approach LOS							B		A			
Intersection Summary												
Average Delay			7.7									
Intersection Capacity Utilization			23.0%				ICU Level of Service			A		
Analysis Period (min)			15									

























HCM Unsignalized Intersection Capacity Analysis
 16: UPCOUNTRY HIGHWAY & DRIVE D

6/24/2014

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	0	3	0	0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3	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			3		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		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)			1619		1023	1085
Direction, Lane #	EB 1	NB 1				
Volume Total	3	3				
Volume Left	0	3				
Volume Right	3	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			4.3			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

























HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

5/28/2014

												
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	0.95	0.95	1.00	0.95	0.95	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	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1751	1583	1681	1720	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1751	1583	1681	1720	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	115	76	120	243	66	168	147	1767	99	138	1674	84
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)	125	83	130	264	72	183	160	1921	108	150	1820	91
RTOR Reduction (vph)	0	0	119	0	0	99	0	0	27	0	0	24
Lane Group Flow (vph)	102	106	11	164	172	84	160	1921	81	150	1820	67
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)	11.6	11.6	11.6	17.7	17.7	17.7	15.6	92.7	92.7	8.0	85.1	85.1
Effective Green, g (s)	12.6	12.6	12.6	18.7	18.7	18.7	16.6	93.7	93.7	9.0	86.1	86.1
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.11	0.62	0.62	0.06	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)	141	147	133	210	214	197	196	2211	989	206	2031	909
v/s Ratio Prot	0.06	0.06		0.10	0.10		c0.09	0.54		0.04	c0.51	
v/s Ratio Perm			0.08			0.12			0.07			0.06
v/c Ratio	0.72	0.72	0.08	0.78	0.80	0.43	0.82	0.87	0.08	0.73	0.90	0.07
Uniform Delay, d1	67.0	67.0	63.4	63.7	63.9	60.7	65.2	23.1	11.1	69.3	28.0	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.38	2.31
Incremental Delay, d2	17.2	16.5	0.3	17.0	19.2	1.5	21.3	5.0	0.2	7.8	5.1	0.1
Delay (s)	84.2	83.4	63.7	80.7	83.1	62.2	86.6	28.1	11.3	65.2	43.7	33.0
Level of Service	F	F	E	F	F	E	F	C	B	E	D	C
Approach Delay (s)		76.1			75.0			31.5			44.8	
Approach LOS		E			E			C			D	
Intersection Summary												
HCM Average Control Delay			44.2			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)					16.0	
Intersection Capacity Utilization			80.6%			ICU Level of Service					D	
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

5/28/2014

												
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	0.73	1.00	1.00	0.74	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1354	1863	1583	1385	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	78	19	118	72	42	67	91	1740	151	100	1685	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	21	128	78	46	73	99	1891	164	109	1832	70
RTOR Reduction (vph)	0	0	115	0	0	66	0	0	34	0	0	15
Lane Group Flow (vph)	85	21	13	78	46	7	99	1891	130	109	1832	55
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)	15.0	15.0	15.0	15.0	15.0	15.0	12.6	107.4	107.4	13.6	108.4	108.4
Effective Green, g (s)	15.0	15.0	15.0	15.0	15.0	15.0	13.6	108.4	108.4	14.6	109.4	109.4
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.72	0.72	0.10	0.73	0.73
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)	135	186	158	139	186	158	160	2558	1144	172	2581	1155
v/s Ratio Prot		0.01			0.02		0.06	c0.53		c0.06	0.52	
v/s Ratio Perm	0.06		0.08	0.06		0.05			0.10			0.04
v/c Ratio	0.63	0.11	0.08	0.56	0.25	0.05	0.62	0.74	0.11	0.63	0.71	0.05
Uniform Delay, d1	64.8	61.4	61.2	64.4	62.3	61.0	65.7	12.4	6.3	65.1	11.4	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.82	2.09	1.19	1.40	1.16
Incremental Delay, d2	8.9	0.3	0.2	5.1	0.7	0.1	3.7	1.0	0.1	5.3	1.2	0.1
Delay (s)	73.7	61.7	61.5	69.5	63.0	61.2	76.5	23.5	13.2	82.9	17.2	6.7
Level of Service	E	E	E	E	E	E	E	C	B	F	B	A
Approach Delay (s)		65.9			64.9			25.2			20.4	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM Average Control Delay			26.9	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			74.6%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/28/2014

												
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	306	33	12	44	488	1263	15	10	1379	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	333	36	13	48	530	1373	16	11	1499	195
RTOR Reduction (vph)	0	0	103	0	24	0	0	0	0	0	0	62
Lane Group Flow (vph)	201	210	230	0	73	0	530	1389	0	11	1499	133
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)	22.1	22.1	52.3		9.1		24.2	94.8		2.0	72.1	72.1
Effective Green, g (s)	24.1	24.1	52.8		11.1		24.7	96.8		2.0	74.1	74.1
Actuated g/C Ratio	0.16	0.16	0.35		0.07		0.16	0.65		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		2.0	4.5		2.0	4.5	4.5
Lane Grp Cap (vph)	270	271	981		126		565	2280		24	1748	782
v/s Ratio Prot	0.12	c0.12			c0.06		c0.15	0.39		0.01	c0.42	
v/s Ratio Perm			0.12									0.12
v/c Ratio	0.74	0.77	0.23		0.58		0.94	0.61		0.46	0.86	0.17
Uniform Delay, d1	60.0	60.3	34.3		67.2		61.9	15.5		73.5	33.3	21.0
Progression Factor	0.77	0.77	1.15		1.00		1.08	1.15		1.00	1.00	1.00
Incremental Delay, d2	9.6	11.7	0.0		6.3		17.8	0.8		5.0	5.7	0.5
Delay (s)	55.6	58.1	39.5		73.5		85.0	18.7		78.4	39.0	21.4
Level of Service	E	E	D		E		F	B		E	D	C
Approach Delay (s)		49.1			73.5			37.0			37.3	
Approach LOS		D			E			D			D	
Intersection Summary												
HCM Average Control Delay			39.9			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			79.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

































4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/28/2014

	→	↘	↙	←	↖	↗
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)	496	557	141	452	318	178
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	539	605	153	491	346	193
RTOR Reduction (vph)	0	234	0	0	0	148
Lane Group Flow (vph)	539	371	153	491	346	45
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	83.1	83.1	18.4	105.5	33.5	33.5
Effective Green, g (s)	84.6	84.6	18.4	107.0	35.0	35.0
Actuated g/C Ratio	0.56	0.56	0.12	0.71	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)	1051	893	217	2524	801	369
v/s Ratio Prot	0.29		c0.09	0.14	0.10	
v/s Ratio Perm		0.38				0.12
v/c Ratio	0.51	0.42	0.71	0.19	0.43	0.12
Uniform Delay, d1	20.1	18.6	63.2	7.2	49.0	45.4
Progression Factor	1.00	1.00	1.49	0.23	1.00	1.00
Incremental Delay, d2	1.8	1.4	5.5	0.1	1.7	0.7
Delay (s)	21.8	20.1	99.7	1.8	50.7	46.1
Level of Service	C	C	F	A	D	D
Approach Delay (s)	20.9			25.0	49.1	
Approach LOS	C			C	D	
Intersection Summary						
HCM Average Control Delay			28.6		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			53.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

5/28/2014













												
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	0.97	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	3433	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	3433	3539	2787	3433	3539	1583
Volume (vph)	49	186	189	515	192	531	135	1430	509	512	1365	92
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)	52	196	199	542	202	559	142	1505	536	539	1437	97
RTOR Reduction (vph)	0	0	23	0	0	101	0	0	19	0	0	26
Lane Group Flow (vph)	52	196	176	542	202	458	142	1505	517	539	1437	71
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)	9.3	15.2	28.2	31.4	37.3	69.2	13.0	85.5	116.9	31.9	104.4	104.4
Effective Green, g (s)	9.3	15.2	28.2	31.4	37.3	69.2	13.0	85.5	116.9	31.9	104.4	104.4
Actuated g/C Ratio	0.05	0.08	0.16	0.17	0.21	0.38	0.07	0.48	0.65	0.18	0.58	0.58
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)	91	299	283	599	386	1133	248	1681	1872	608	2053	918
v/s Ratio Prot	0.03	0.06	c0.05	c0.16	0.11	0.09	0.04	c0.43	0.05	c0.16	0.41	
v/s Ratio Perm			0.07			0.11			0.14			0.06
v/c Ratio	0.57	0.66	0.62	0.90	0.52	0.40	0.57	0.90	0.28	0.89	0.70	0.08
Uniform Delay, d1	83.4	79.9	70.9	72.8	63.4	40.4	80.8	43.2	13.5	72.3	26.7	16.6
Progression Factor	1.00	1.00	1.00	0.86	1.03	1.10	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.4	5.1	4.2	15.8	1.2	0.2	3.2	7.8	0.1	14.5	2.0	0.2
Delay (s)	91.8	85.0	75.1	78.7	66.4	44.8	84.0	51.0	13.6	86.8	28.7	16.8
Level of Service	F	F	E	E	E	D	F	D	B	F	C	B
Approach Delay (s)		81.4			62.3			44.0			43.3	
Approach LOS		F			E			D			D	

Intersection Summary

HCM Average Control Delay	50.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

5/28/2014























						
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)	163	120	544	239	148	522
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	130	591	260	161	567
RTOR Reduction (vph)	0	107	0	129	0	0
Lane Group Flow (vph)	177	23	591	131	161	567
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	9.4	9.4	27.0	27.0	5.1	36.1
Effective Green, g (s)	9.4	9.4	27.0	27.0	5.1	36.1
Actuated g/C Ratio	0.18	0.18	0.50	0.50	0.10	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)	311	278	940	799	169	1257
v/s Ratio Prot	c0.10		c0.32		c0.09	0.30
v/s Ratio Perm		0.08		0.16		
v/c Ratio	0.57	0.08	0.63	0.16	0.95	0.45
Uniform Delay, d1	20.2	18.4	9.6	7.2	24.1	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	1.3	0.1	55.0	0.3
Delay (s)	22.6	18.6	10.9	7.3	79.1	4.3
Level of Service	C	B	B	A	E	A
Approach Delay (s)	20.9		9.8			20.9
Approach LOS	C		A			C

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			















HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/28/2014

												
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)		1781	1583		1780	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.71	1.00		0.61	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1332	1583		1127	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	67	6	90	35	3	12	80	2097	27	11	1935	112
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)	73	7	98	38	3	13	87	2279	29	12	2103	122
RTOR Reduction (vph)	0	0	89	0	0	12	0	0	4	0	0	20
Lane Group Flow (vph)	0	80	9	0	41	1	87	2279	25	12	2103	102
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)		14.1	14.1		14.1	14.1	12.4	120.8	120.8	3.1	111.5	111.5
Effective Green, g (s)		14.1	14.1		14.1	14.1	12.4	120.8	120.8	3.1	111.5	111.5
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.08	0.81	0.81	0.02	0.74	0.74
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)		125	149		106	149	146	2850	1275	37	2631	1177
v/s Ratio Prot							c0.05	c0.64		0.01	0.59	
v/s Ratio Perm		0.06	0.06		0.04	0.01			0.02			0.08
v/c Ratio		0.64	0.06		0.39	0.01	0.60	0.80	0.02	0.32	0.80	0.09
Uniform Delay, d1		65.5	61.9		63.9	61.6	66.4	8.0	2.9	72.4	12.2	5.3
Progression Factor		1.00	1.00		1.00	1.00	0.91	0.86	1.35	1.00	1.00	1.00
Incremental Delay, d2		10.7	0.2		2.3	0.0	4.3	1.6	0.0	5.1	2.6	0.1
Delay (s)		76.2	62.1		66.2	61.6	64.7	8.5	3.9	77.5	14.8	5.4
Level of Service		E	E		E	E	E	A	A	E	B	A
Approach Delay (s)		68.4			65.1			10.5			14.6	
Approach LOS		E			E			B			B	
Intersection Summary												
HCM Average Control Delay			15.1				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			82.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

5/28/2014

						
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)	368	251	244	1707	1523	484
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	400	273	265	1855	1655	526
RTOR Reduction (vph)	0	180	0	0	0	148
Lane Group Flow (vph)	400	93	265	1855	1655	378
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	34.9	34.9	26.3	107.1	76.8	76.8
Effective Green, g (s)	34.9	34.9	26.3	107.1	76.8	76.8
Actuated g/C Ratio	0.23	0.23	0.18	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)	412	368	310	2527	1812	810
v/s Ratio Prot	c0.23		c0.15	0.52	c0.47	
v/s Ratio Perm		0.17				0.33
v/c Ratio	0.97	0.25	0.85	0.73	0.91	0.47
Uniform Delay, d1	57.0	46.9	60.0	12.9	33.6	23.5
Progression Factor	1.00	1.00	1.00	1.00	0.77	0.70
Incremental Delay, d2	36.6	0.4	19.9	1.9	5.7	1.2
Delay (s)	93.6	47.3	79.9	14.8	31.5	17.7
Level of Service	F	D	E	B	C	B
Approach Delay (s)	74.8			23.0	28.2	
Approach LOS	E			C	C	
Intersection Summary						
HCM Average Control Delay			32.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			86.0%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 12: KAONOULU STREET & DRIVE A

5/28/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433	1863			1863	1583
Volume (vph)	376	235	287	0	453	0	390	37	0	0	60	171
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)	409	255	312	0	492	0	424	40	0	0	65	186
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	409	255	208	0	492	0	424	40	0	0	65	45
Turn Type	Prot		pt+ov	Prot			Prot			Perm		Perm
Protected Phases	7	4	4 5	3	8		5	2			6	
Permitted Phases										6		6
Actuated Green, G (s)	17.4	38.1	60.1		16.7		18.0	43.9			21.9	21.9
Effective Green, g (s)	17.4	38.1	60.1		16.7		18.0	43.9			21.9	21.9
Actuated g/C Ratio	0.19	0.42	0.67		0.19		0.20	0.49			0.24	0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	664	1498	1057		657		687	909			453	385
v/s Ratio Prot	c0.12	0.07	0.20		c0.14		c0.12	0.02			0.03	
v/s Ratio Perm												0.12
v/c Ratio	0.62	0.17	0.20		0.75		0.62	0.04			0.14	0.12
Uniform Delay, d1	33.2	16.1	5.7		34.7		32.9	12.1			26.7	26.5
Progression Factor	1.19	1.27	5.98		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.4	0.0	0.1		4.7		1.7	0.1			0.7	0.6
Delay (s)	40.9	20.5	34.3		39.3		34.5	12.2			27.4	27.1
Level of Service	D	C	C		D		C	B			C	C
Approach Delay (s)		33.5			39.3			32.6			27.2	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM Average Control Delay			33.9				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			51.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

5/28/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	76	120	243	66	168	147	1767	99	138	1674	84
Lane Group Flow (vph)	102	106	130	164	172	183	160	1921	108	150	1820	91
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)	17.0	17.0	17.0	24.0	24.0	24.0	22.0	96.0	96.0	13.0	87.0	87.0
Total Split (%)	11.3%	11.3%	11.3%	16.0%	16.0%	16.0%	14.7%	64.0%	64.0%	8.7%	58.0%	58.0%
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	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.72	0.72	0.52	0.78	0.80	0.62	0.82	0.87	0.11	0.73	0.90	0.10
Control Delay	91.2	90.3	17.2	82.5	83.8	32.5	86.6	29.0	4.7	73.0	44.9	16.0
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	91.2	90.3	17.2	82.5	83.8	32.5	86.6	29.0	4.7	73.0	44.9	16.0
Queue Length 50th (ft)	104	108	0	165	173	63	154	798	13	76	694	28
Queue Length 95th (ft)	#196	#201	67	#273	#289	149	#263	923	39 m	#113	1005	m68
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	146	152	256	224	229	309	212	2212	1017	206	2031	932
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	0.70	0.70	0.51	0.73	0.75	0.59	0.75	0.87	0.11	0.73	0.90	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 100

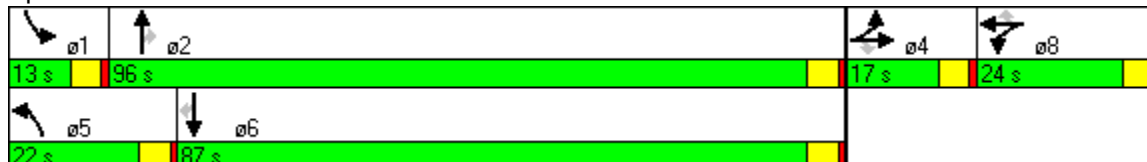
Control Type: Actuated-Coordinated

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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

5/28/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	19	118	72	42	67	91	1740	151	100	1685	64
Lane Group Flow (vph)	85	21	128	78	46	73	99	1891	164	109	1832	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)	28.0	28.0	28.0	28.0	28.0	28.0	20.0	100.0	100.0	22.0	102.0	102.0
Total Split (%)	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	13.3%	66.7%	66.7%	14.7%	68.0%	68.0%
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	0.63	0.11	0.47	0.56	0.25	0.33	0.62	0.74	0.14	0.63	0.71	0.06
Control Delay	68.8	58.9	11.7	67.3	61.1	13.6	77.8	26.8	5.6	83.2	19.3	3.2
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	68.8	58.9	11.7	67.3	61.1	13.6	77.8	26.8	5.6	83.2	19.3	3.2
Queue Length 50th (ft)	82	19	0	74	43	0	88	931	27	97	838	5
Queue Length 95th (ft)	135	45	61	125	81	48	m107	1100	m56	m121	1033	m22
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	217	298	361	222	298	315	189	2557	1177	212	2582	1170
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	0.39	0.07	0.35	0.35	0.15	0.23	0.52	0.74	0.14	0.51	0.71	0.06

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/28/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	369	9	306	12	488	1263	10	1379	179
Lane Group Flow (vph)	201	210	333	97	530	1389	11	1499	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	60.0	16.0	29.0	94.0	9.0	74.0	74.0
Total Split (%)	20.7%	20.7%	40.0%	10.7%	19.3%	62.7%	6.0%	49.3%	49.3%
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	0.74	0.77	0.31	0.64	0.94	0.59	0.19	0.86	0.23
Control Delay	55.7	57.2	20.5	65.3	84.3	18.8	77.9	40.4	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	57.2	20.5	65.3	84.3	18.8	77.9	40.4	9.6
Queue Length 50th (ft)	195	205	105	68	283	261	11	698	39
Queue Length 95th (ft)	295	307	147	132	#379	546	34	817	90
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	303	304	1077	160	572	2335	59	1747	843
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	0.66	0.69	0.31	0.61	0.93	0.59	0.19	0.86	0.23

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

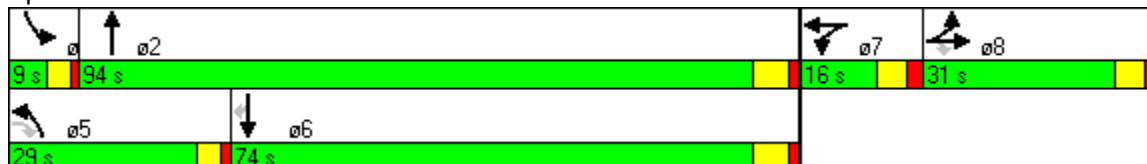
Natural Cycle: 100

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/28/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↖	↗
Volume (vph)	496	557	141	452	318	178
Lane Group Flow (vph)	539	605	153	491	346	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)	71.0	71.0	40.0	111.0	39.0	39.0
Total Split (%)	47.3%	47.3%	26.7%	74.0%	26.0%	26.0%
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	0.51	0.54	0.71	0.19	0.43	0.37
Control Delay	23.3	4.7	94.1	1.8	51.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	4.7	94.1	1.8	51.0	8.0
Queue Length 50th (ft)	308	29	156	16	150	0
Queue Length 95th (ft)	480	124	m132	m16	200	66
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	1050	1127	425	2524	801	517
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	0.51	0.54	0.36	0.19	0.43	0.37

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 30 (20%), 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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

5/28/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	186	189	515	192	531	135	1430	509	512	1365	92
Lane Group Flow (vph)	52	196	199	542	202	559	142	1505	536	539	1437	97
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	36.0	36.0	35.0	23.0	89.0	36.0	35.0	101.0	101.0
Total Split (%)	11.1%	11.1%	12.8%	20.0%	20.0%	19.4%	12.8%	49.4%	20.0%	19.4%	56.1%	56.1%
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	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	0.50	0.69	0.67	0.90	0.52	0.45	0.57	0.89	0.28	0.89	0.70	0.10
Control Delay	87.0	89.5	65.7	78.3	71.3	31.0	83.4	49.9	10.9	87.5	29.3	7.8
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	87.0	89.5	65.7	78.3	71.3	31.0	83.4	49.9	10.9	87.5	29.3	7.8
Queue Length 50th (ft)	61	120	193	340	242	215	85	851	123	325	617	18
Queue Length 95th (ft)	111	167	279	#429	339	294	122	961	155	#432	762	51
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	157	315	350	613	387	1238	362	1714	1913	617	2067	950
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	0.33	0.62	0.57	0.88	0.52	0.45	0.39	0.88	0.28	0.87	0.70	0.10

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

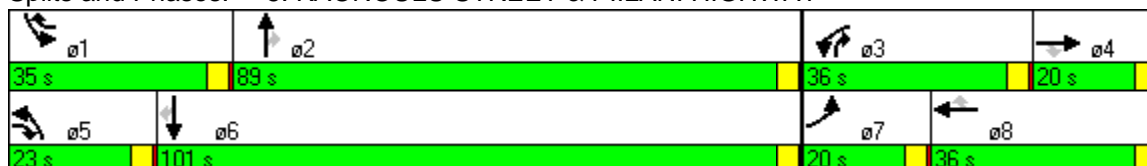
Natural Cycle: 120

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



Queues

6: KAONOULU STREET & SOUTH KIHEI ROAD

5/28/2014

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	163	120	544	239	148	522
Lane Group Flow (vph)	177	130	591	260	161	567
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	31.0	31.0	9.0	40.0
Total Split (%)	33.3%	33.3%	51.7%	51.7%	15.0%	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	0.51	0.31	0.62	0.28	0.94	0.44
Control Delay	20.0	5.5	14.0	2.4	87.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	5.5	14.0	2.4	87.2	6.4
Queue Length 50th (ft)	44	0	126	0	46	68
Queue Length 95th (ft)	100	34	270	33	#169	169
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	480	524	1017	982	171	1340
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	0.37	0.25	0.58	0.26	0.94	0.42

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 53

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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/28/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	6	90	35	3	12	80	2097	27	11	1935	112
Lane Group Flow (vph)	0	80	98	0	41	13	87	2279	29	12	2103	122
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)	27.0	27.0	27.0	27.0	27.0	27.0	25.0	107.0	107.0	16.0	98.0	98.0
Total Split (%)	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	16.7%	71.3%	71.3%	10.7%	65.3%	65.3%
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 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		0.64	0.41		0.32	0.08	0.60	0.78	0.02	0.16	0.80	0.10
Control Delay		70.0	12.8		63.9	25.0	62.3	9.4	3.2	69.8	16.8	3.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		70.0	12.8		63.9	25.0	62.3	9.4	3.2	69.8	16.8	3.0
Queue Length 50th (ft)		77	0		38	0	85	303	1	12	613	10
Queue Length 95th (ft)		131	56		77	22	m112	m715	m6	35	956	37
Internal Link Dist (ft)		212			261			1847			2017	
Turn Bay Length (ft)												
Base Capacity (vph)		205	326		209	254	248	2908	1304	142	2632	1197
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		0.39	0.30		0.20	0.05	0.35	0.78	0.02	0.08	0.80	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 40 (27%), 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



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

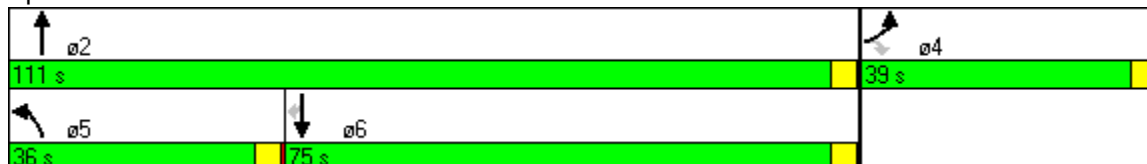
5/28/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	368	251	244	1707	1523	484
Lane Group Flow (vph)	400	273	265	1855	1655	526
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)	39.0	39.0	36.0	111.0	75.0	75.0
Total Split (%)	26.0%	26.0%	24.0%	74.0%	50.0%	50.0%
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	0.97	0.50	0.85	0.73	0.91	0.55
Control Delay	93.5	12.3	69.8	15.1	32.6	8.7
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	93.5	12.3	69.8	15.5	32.6	8.7
Queue Length 50th (ft)	391	30	253	527	671	60
Queue Length 95th (ft)	#606	115	347	609	#1002	194
Internal Link Dist (ft)	745			1063	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	413	550	378	2527	1812	958
Starvation Cap Reductn	0	0	0	230	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.50	0.70	0.81	0.91	0.55

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 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.

Splits and Phases: 8: PIIKEA AVENUE & PIILANI HIGHWAY



Queues

12: KAONOULU STREET & DRIVE A

5/28/2014

									ø3
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR	ø3
Lane Configurations									
Volume (vph)	376	235	287	453	390	37	60	171	
Lane Group Flow (vph)	409	255	312	492	424	40	65	186	
Turn Type	Prot		pt+ov		Prot			Perm	
Protected Phases	7	4	4 5	8	5	2	6		3
Permitted Phases								6	
Detector Phases	7	4	4 5	8	5	2	6	6	
Minimum Initial (s)	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	20.0	20.0	8.0
Total Split (s)	23.0	37.0	60.0	23.0	23.0	44.0	21.0	21.0	9.0
Total Split (%)	25.6%	41.1%	66.7%	25.6%	25.6%	48.9%	23.3%	23.3%	10%
Yellow Time (s)	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
Lead/Lag	Lead	Lag		Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	C-Max	C-Max	C-Max	None
v/c Ratio	0.62	0.17	0.27	0.75	0.62	0.04	0.14	0.35	
Control Delay	41.9	20.0	2.5	39.0	36.0	14.0	31.2	7.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.9	20.0	2.5	39.0	36.0	14.0	31.2	7.2	
Queue Length 50th (ft)	200	91	20	139	109	12	31	0	
Queue Length 95th (ft)	m241	m111	m66	190	160	31	67	54	
Internal Link Dist (ft)		146		432		103	80		
Turn Bay Length (ft)									
Base Capacity (vph)	725	1523	1177	747	739	909	452	525	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.17	0.27	0.66	0.57	0.04	0.14	0.35	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

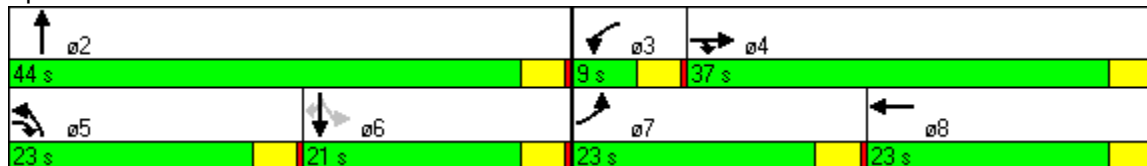
Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated





















m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: KAONOULU STREET & DRIVE A















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

5/28/2014

												
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	296	16	39	280	98	9	8	34	120	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	322	17	42	304	107	10	9	37	130	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)					333							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	411			339			821	907	330	886	862	358
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			339			803	897	330	875	849	295
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			97			96	96	95	39	96	98
cM capacity (veh/h)	1098			1220			246	237	711	215	253	678
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	40	339	42	411	10	46	130	26				
Volume Left	40	0	42	0	10	0	130	0				
Volume Right	0	17	0	107	0	37	0	15				
cSH	1098	1700	1220	1700	246	515	215	399				
Volume to Capacity	0.04	0.20	0.03	0.24	0.04	0.09	0.61	0.07				
Queue Length 95th (ft)	3	0	3	0	3	7	87	5				
Control Delay (s)	8.4	0.0	8.1	0.0	20.2	12.7	44.8	14.7				
Lane LOS	A		A		C	B	E	B				
Approach Delay (s)	0.9		0.8		14.0		39.8					
Approach LOS					B		E					
Intersection Summary												
Average Delay			7.4									
Intersection Capacity Utilization			47.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

5/28/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	82	341	16	2	300	6	2	1	3	3	1	58
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)	89	371	17	2	326	7	2	1	3	3	1	63
Approach Volume (veh/h)		477			335			7			67	
Crossing Volume (veh/h)		7			92			463			330	
High Capacity (veh/h)		1378			1288			961			1068	
High v/c (veh/h)		0.35			0.26			0.01			0.06	
Low Capacity (veh/h)		1155			1074			779			875	
Low v/c (veh/h)		0.41			0.31			0.01			0.08	
Intersection Summary												
Maximum v/c High			0.35									
Maximum v/c Low			0.41									
Intersection Capacity Utilization			36.1%		ICU Level of Service					A		







HCM Unsignalized Intersection Capacity Analysis
 13: KAONOULU STREET & DRIVE B SOUTH

5/28/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	896	311	0	1240	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	974	338	0	1348	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			0.97		0.89	0.97
vC, conflicting volume			1312		1648	487
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1293		1515	446
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)			518		98	545
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	487	487	338	674	674	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	338	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.29	0.29	0.20	0.40	0.40	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			37.6%		ICU Level of Service	A
Analysis Period (min)			15			






















HCM Unsignalized Intersection Capacity Analysis
 14: KAONOULU STREET & DRIVE B NORTH

5/28/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	896	1013	0	0	227
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	974	1101	0	0	247
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	0.87				0.88	0.87
vC, conflicting volume	1101				1588	551
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	971				1467	341
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	57
cM capacity (veh/h)	616				105	572
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	487	487	551	551	0	247
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	247
cSH	1700	1700	1700	1700	1700	572
Volume to Capacity	0.29	0.29	0.32	0.32	0.00	0.43
Queue Length 95th (ft)	0	0	0	0	0	54
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	16.0
Lane LOS						C
Approach Delay (s)	0.0		0.0			16.0
Approach LOS						C
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			48.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: KAONOULU STREET & DRIVE C

5/28/2014

												
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)	105	20	109	0	40	0	350	0	0	0	0	63
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)	114	22	118	0	43	0	380	0	0	0	0	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)		512										
pX, platoon unblocked												
vC, conflicting volume	43			140			340	293	22	293	412	22
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	43			140			340	293	22	293	412	22
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			27	100	100	100	100	93
cM capacity (veh/h)	1563			1441			520	571	1050	601	490	1050
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2		
Volume Total	114	22	118	0	29	14	380	0	0	68		
Volume Left	114	0	0	0	0	0	380	0	0	0		
Volume Right	0	0	118	0	0	0	0	0	0	68		
cSH	1563	1700	1700	1700	1700	1700	520	1700	1700	1050		
Volume to Capacity	0.07	0.01	0.07	0.00	0.02	0.01	0.73	0.00	0.00	0.07		
Queue Length 95th (ft)	6	0	0	0	0	0	151	0	0	5		
Control Delay (s)	7.5	0.0	0.0	0.0	0.0	0.0	28.5	0.0	0.0	8.7		
Lane LOS	A						D	A	A	A		
Approach Delay (s)	3.4			0.0			28.5		8.7			
Approach LOS							D		A			
Intersection Summary												
Average Delay			16.4									
Intersection Capacity Utilization			38.5%				ICU Level of Service		A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: KAONOULU STREET & DRIVE D

5/28/2014

	→	↘	↙	←	↖	↗
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			

HCM Signalized Intersection Capacity Analysis
 1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

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	0.95	0.95	1.00	0.95	0.95	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	0.97	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1740	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	0.97	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1740	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	177	45	191	121	62	37	86	1325	150	95	1443	105
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)	192	49	208	132	67	40	93	1440	163	103	1568	114
RTOR Reduction (vph)	0	0	128	0	0	37	0	0	76	0	0	51
Lane Group Flow (vph)	117	124	80	97	102	3	93	1440	87	103	1568	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)	10.2	10.2	10.2	5.3	5.3	5.3	4.5	45.2	45.2	6.0	46.7	46.7
Effective Green, g (s)	11.2	11.2	11.2	6.3	6.3	6.3	5.5	46.2	46.2	7.0	47.7	47.7
Actuated g/C Ratio	0.13	0.13	0.13	0.07	0.07	0.07	0.06	0.53	0.53	0.08	0.55	0.55
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)	217	222	204	122	126	115	112	1886	844	277	1947	871
v/s Ratio Prot	0.07	0.07		0.06	c0.06		c0.05	0.41		0.03	c0.44	
v/s Ratio Perm			0.13			0.03			0.10			0.07
v/c Ratio	0.54	0.56	0.39	0.80	0.81	0.03	0.83	0.76	0.10	0.37	0.81	0.07
Uniform Delay, d1	35.3	35.4	34.6	39.6	39.6	37.3	40.1	15.9	10.0	37.8	15.8	9.1
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	2.9	3.3	1.5	29.0	30.5	0.1	36.8	2.2	0.1	0.3	2.9	0.1
Delay (s)	38.2	38.8	36.1	68.6	70.1	37.4	77.0	18.2	10.1	38.1	18.6	9.2
Level of Service	D	D	D	E	E	D	E	B	B	D	B	A
Approach Delay (s)		37.4			64.0			20.6			19.2	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM Average Control Delay			24.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			86.7			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												






















HCM Signalized Intersection Capacity Analysis
 2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

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	0.73	1.00	1.00	0.75	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1359	1863	1583	1394	1863	1583	1770	3539	1583	1770	3539	1583
Volume (vph)	60	13	110	96	39	51	73	1359	108	68	1627	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	14	120	104	42	55	79	1477	117	74	1768	53
RTOR Reduction (vph)	0	0	104	0	0	48	0	0	41	0	0	18
Lane Group Flow (vph)	65	14	16	104	42	7	79	1477	76	74	1768	35
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)	11.3	11.3	11.3	11.3	11.3	11.3	6.2	58.3	58.3	6.2	58.3	58.3
Effective Green, g (s)	12.3	12.3	12.3	12.3	12.3	12.3	7.2	59.3	59.3	7.2	59.3	59.3
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.08	0.65	0.65	0.08	0.65	0.65
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)	184	252	214	189	252	214	140	2311	1034	140	2311	1034
v/s Ratio Prot		0.01			0.02		c0.04	0.42		0.04	c0.50	
v/s Ratio Perm	0.05		0.08	0.07		0.03			0.07			0.03
v/c Ratio	0.35	0.06	0.08	0.55	0.17	0.03	0.56	0.64	0.07	0.53	0.77	0.03
Uniform Delay, d1	35.6	34.2	34.3	36.7	34.7	34.1	40.3	9.4	5.7	40.2	10.9	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	1.6	0.1	0.2	4.2	0.4	0.1	3.1	0.8	0.1	1.7	1.8	0.0
Delay (s)	37.2	34.3	34.5	40.9	35.1	34.2	43.4	10.2	5.8	41.8	12.8	5.6
Level of Service	D	C	C	D	D	C	D	B	A	D	B	A
Approach Delay (s)		35.4			37.9			11.5			13.7	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			15.1				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			90.8				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			71.1%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

												
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	444	1	0	2	386	1086	4	6	1274	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	483	1	0	2	420	1180	4	7	1385	171
RTOR Reduction (vph)	0	0	170	0	2	0	0	0	0	0	0	88
Lane Group Flow (vph)	101	101	313	0	1	0	420	1184	0	7	1385	83
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	27.7		0.8		14.6	51.5		0.8	37.7	37.7
Effective Green, g (s)	9.1	9.1	27.7		2.8		14.6	53.5		0.8	39.7	39.7
Actuated g/C Ratio	0.11	0.11	0.34		0.03		0.18	0.65		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)	186	186	939		57		610	2302		17	1709	765
v/s Ratio Prot	0.06	0.06			c0.00		c0.12	0.33		0.00	c0.39	
v/s Ratio Perm			0.17									0.11
v/c Ratio	0.54	0.54	0.33		0.02		0.69	0.51		0.41	0.81	0.11
Uniform Delay, d1	34.6	34.6	20.4		38.4		31.7	7.5		40.5	18.1	11.6
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	3.2	0.1		0.1		2.6	0.3		5.8	3.3	0.1
Delay (s)	37.8	37.8	20.4		38.5		34.3	7.9		46.3	21.4	11.7
Level of Service	D	D	C		D		C	A		D	C	B
Approach Delay (s)		25.6			38.5			14.8			20.4	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM Average Control Delay			19.0			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			82.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			68.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
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)	404	443	129	396	347	141
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	439	482	140	430	377	153
RTOR Reduction (vph)	0	270	0	0	0	0
Lane Group Flow (vph)	439	212	140	430	377	153
Turn Type		Perm	Prot			custom
Protected Phases	2		1	6	3	
Permitted Phases		2				1 2 3
Actuated Green, G (s)	25.7	25.7	9.5	39.2	11.7	61.9
Effective Green, g (s)	27.2	27.2	9.5	40.7	13.2	61.9
Actuated g/C Ratio	0.44	0.44	0.15	0.66	0.21	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)	819	696	272	2327	732	1583
v/s Ratio Prot	0.24		c0.08	0.12	c0.11	
v/s Ratio Perm		0.30				0.10
v/c Ratio	0.54	0.30	0.51	0.18	0.52	0.10
Uniform Delay, d1	12.7	11.2	24.1	4.1	21.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.7	0.1	0.3	0.0
Delay (s)	14.0	11.7	24.8	4.2	21.8	0.0
Level of Service	B	B	C	A	C	A
Approach Delay (s)	12.8			9.3	15.5	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			12.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			61.9		Sum of lost time (s)	12.0
Intersection Capacity Utilization			48.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

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)	74	242	170	647	219	629	129	810	664	704	924	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)	80	263	185	703	238	684	140	880	722	765	1004	127
RTOR Reduction (vph)	0	0	20	0	0	164	0	0	23	0	0	77
Lane Group Flow (vph)	80	263	165	703	238	520	140	880	699	765	1004	50
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)	8.0	10.5	20.1	19.0	21.5	42.5	9.6	23.9	42.9	21.0	35.3	35.3
Effective Green, g (s)	8.0	10.5	20.1	19.0	21.5	42.5	9.6	23.9	42.9	21.0	35.3	35.3
Actuated g/C Ratio	0.09	0.12	0.22	0.21	0.24	0.47	0.11	0.26	0.47	0.23	0.39	0.39
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)	157	411	422	722	443	1434	188	936	1446	797	1382	618
v/s Ratio Prot	0.05	0.07	0.05	c0.20	c0.13	0.11	0.08	c0.25	0.10	c0.22	0.28	
v/s Ratio Perm			0.07			0.13			0.15			0.08
v/c Ratio	0.51	0.64	0.39	0.97	0.54	0.36	0.74	0.94	0.48	0.96	0.73	0.08
Uniform Delay, d1	39.3	38.1	29.9	35.5	30.1	15.3	39.2	32.6	16.2	34.3	23.4	17.3
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	2.6	3.3	0.6	26.9	1.3	0.2	14.8	16.8	0.3	22.3	1.9	0.1
Delay (s)	41.9	41.4	30.5	62.3	31.4	15.5	54.0	49.4	16.5	56.5	25.4	17.4
Level of Service	D	D	C	E	C	B	D	D	B	E	C	B
Approach Delay (s)		37.7			38.1			36.1			37.4	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			37.2				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.4				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			81.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												























HCM Signalized Intersection Capacity Analysis
 6: KAONOULU STREET & SOUTH KIHEI ROAD

5/30/2014

						
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	673	1863
Volume (vph)	207	123	536	233	153	455
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	134	583	253	166	495
RTOR Reduction (vph)	0	103	0	108	0	0
Lane Group Flow (vph)	225	31	583	145	166	495
Turn Type		Perm		Perm	Perm	
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	9.6	9.6	23.6	23.6	23.6	23.6
Effective Green, g (s)	9.6	9.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.23	0.23	0.57	0.57	0.57	0.57
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)	412	369	1067	907	386	1067
v/s Ratio Prot	c0.13		c0.31			0.27
v/s Ratio Perm		0.08		0.16	0.25	
v/c Ratio	0.55	0.08	0.55	0.16	0.43	0.46
Uniform Delay, d1	13.9	12.4	5.5	4.1	5.0	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	0.6	0.1	0.8	0.3
Delay (s)	15.4	12.5	6.0	4.2	5.8	5.4
Level of Service	B	B	A	A	A	A
Approach Delay (s)	14.3		5.5			5.5
Approach LOS	B		A			A
Intersection Summary						
HCM Average Control Delay			7.2		HCM Level of Service	A
HCM Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			41.2		Sum of lost time (s)	8.0
Intersection Capacity Utilization			58.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis
 7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

												
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)	87	0	81	0	0	0	35	1613	0	0	1532	105
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)	95	0	88	0	0	0	38	1753	0	0	1665	114
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	95	10	0	0	0	38	1753	0	0	1665	79
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)		10.3	10.3				4.3	69.3			61.0	61.0
Effective Green, g (s)		10.3	10.3				4.3	69.3			61.0	61.0
Actuated g/C Ratio		0.12	0.12				0.05	0.79			0.70	0.70
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)		166	186				87	2800			2464	1102
v/s Ratio Prot							0.02	c0.50			c0.47	
v/s Ratio Perm		c0.07	0.06									0.07
v/c Ratio		0.57	0.06				0.44	0.63			0.68	0.07
Uniform Delay, d1		36.6	34.3				40.5	3.8			7.6	4.3
Progression Factor		1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2		4.7	0.1				3.5	0.4			0.7	0.0
Delay (s)		41.3	34.5				44.0	4.2			8.4	4.3
Level of Service		D	C				D	A			A	A
Approach Delay (s)		38.0			0.0			5.1			8.1	
Approach LOS		D			A			A			A	
Intersection Summary												
HCM Average Control Delay			8.1				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			87.6				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			56.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Signalized Intersection Capacity Analysis
 8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

						
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)	433	255	214	1319	1272	485
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	277	233	1434	1383	527
RTOR Reduction (vph)	0	197	0	0	0	299
Lane Group Flow (vph)	471	80	233	1434	1383	228
Turn Type		Perm	Prot			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.0	26.0	13.0	56.0	39.0	39.0
Effective Green, g (s)	26.0	26.0	13.0	56.0	39.0	39.0
Actuated g/C Ratio	0.29	0.29	0.14	0.62	0.43	0.43
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	511	457	256	2202	1534	686
v/s Ratio Prot	c0.27		c0.13	0.41	c0.39	
v/s Ratio Perm		0.17				0.33
v/c Ratio	0.92	0.18	0.91	0.65	0.90	0.33
Uniform Delay, d1	31.0	24.0	37.9	10.8	23.7	16.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.5	0.8	37.1	1.5	8.9	1.3
Delay (s)	55.5	24.8	75.1	12.3	32.7	18.2
Level of Service	E	C	E	B	C	B
Approach Delay (s)	44.1			21.1	28.7	
Approach LOS	D			C	C	
Intersection Summary						
HCM Average Control Delay			28.4		HCM Level of Service	C
HCM Volume to Capacity ratio			0.91			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			81.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

												
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
Lane Util. Factor	0.97	0.95	1.00		0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	3433	3539	1583		3539		3433	1863			1863	1583
Flt Permitted	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	3433	3539	1583		3539		3433	1863			1863	1583
Volume (vph)	414	277	442	0	589	0	518	60	0	0	55	170
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)	450	301	480	0	640	0	563	65	0	0	60	185
RTOR Reduction (vph)	0	0	273	0	0	0	0	0	0	0	0	143
Lane Group Flow (vph)	450	301	207	0	640	0	563	65	0	0	60	42
Turn Type	Prot		Prot	Prot			Prot			Prot		Perm
Protected Phases	7	4	4	3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	15.6	38.9	38.9		19.3		18.8	43.1			20.3	20.3
Effective Green, g (s)	15.6	38.9	38.9		19.3		18.8	43.1			20.3	20.3
Actuated g/C Ratio	0.17	0.43	0.43		0.21		0.21	0.48			0.23	0.23
Clearance Time (s)	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
Lane Grp Cap (vph)	595	1530	684		759		717	892			420	357
v/s Ratio Prot	0.13	0.09	c0.30		c0.18		c0.16	0.03			0.03	
v/s Ratio Perm												0.12
v/c Ratio	0.76	0.20	0.30		0.84		0.79	0.07			0.14	0.12
Uniform Delay, d1	35.4	15.9	16.7		33.9		33.7	12.7			27.9	27.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.5	0.1	0.3		8.5		5.7	0.2			0.7	0.7
Delay (s)	40.8	15.9	16.9		42.4		39.3	12.8			28.6	28.4
Level of Service	D	B	B		D		D	B			C	C
Approach Delay (s)		25.4			42.4			36.6			28.4	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM Average Control Delay			32.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			59.5%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: OHUKAI STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	45	191	121	62	37	86	1325	150	95	1443	105
Lane Group Flow (vph)	117	124	208	97	102	40	93	1440	163	103	1568	114
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)	15.0	15.0	15.0	12.0	12.0	12.0	11.0	50.0	50.0	13.0	52.0	52.0
Total Split (%)	16.7%	16.7%	16.7%	13.3%	13.3%	13.3%	12.2%	55.6%	55.6%	14.4%	57.8%	57.8%
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	0.52	0.54	0.61	0.64	0.65	0.22	0.66	0.74	0.17	0.29	0.78	0.12
Control Delay	46.2	46.7	21.7	58.5	58.3	15.8	62.1	19.4	2.5	39.6	19.5	2.5
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	46.2	46.7	21.7	58.5	58.3	15.8	62.1	19.4	2.5	39.6	19.5	2.5
Queue Length 50th (ft)	67	71	32	56	60	0	53	337	0	28	371	0
Queue Length 95th (ft)	#127	#140	104	#131	#136	30	#126	431	29	53	472	24
Internal Link Dist (ft)		459			456			2865			2675	
Turn Bay Length (ft)												
Base Capacity (vph)	224	229	339	156	162	183	144	1948	945	357	2017	951
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	0.54	0.61	0.62	0.63	0.22	0.65	0.74	0.17	0.29	0.78	0.12

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 84.4
 Natural Cycle: 75
 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



Queues

2: UWAPO ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	13	110	96	39	51	73	1359	108	68	1627	49
Lane Group Flow (vph)	65	14	120	104	42	55	79	1477	117	74	1768	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)	18.0	18.0	18.0	18.0	18.0	18.0	13.0	59.0	59.0	13.0	59.0	59.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	14.4%	65.6%	65.6%	14.4%	65.6%	65.6%
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							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	0.35	0.05	0.37	0.54	0.16	0.21	0.50	0.63	0.11	0.47	0.76	0.05
Control Delay	38.4	33.0	9.8	42.8	34.4	11.5	47.0	11.6	1.7	46.0	14.6	2.2
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	38.4	33.0	9.8	42.8	34.4	11.5	47.0	11.6	1.7	46.0	14.6	2.2
Queue Length 50th (ft)	33	7	0	55	21	0	43	267	0	40	373	0
Queue Length 95th (ft)	72	24	47	106	50	32	88	343	19	84	480	13
Internal Link Dist (ft)		530			620			2675			2120	
Turn Bay Length (ft)												
Base Capacity (vph)	208	285	344	214	285	289	173	2336	1085	173	2334	1062
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	0.05	0.35	0.49	0.15	0.19	0.46	0.63	0.11	0.43	0.76	0.05

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 89.9
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated

Splits and Phases: 2: UWAPO ROAD & PIILANI HIGHWAY



Queues

3: NORTH KIHEI ROAD & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	186	0	444	0	386	1086	6	1274	157
Lane Group Flow (vph)	101	101	483	3	420	1184	7	1385	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	0.49	0.49	0.40	0.02	0.62	0.46	0.06	0.80	0.20
Control Delay	42.0	42.0	8.5	30.0	29.0	6.1	39.8	22.1	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	42.0	8.5	30.0	29.0	6.1	39.8	22.1	3.3
Queue Length 50th (ft)	44	44	36	0	87	71	3	238	0
Queue Length 95th (ft)	#127	#127	88	9	151	258	18	#557	38
Internal Link Dist (ft)		1420		460		2120		1468	
Turn Bay Length (ft)									
Base Capacity (vph)	207	207	1350	143	933	2569	109	1740	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	0.49	0.49	0.36	0.02	0.45	0.46	0.06	0.80	0.20

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 74

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



Queues

4: NORTH KIHEI ROAD & SOUTH KIHEI ROAD

5/30/2014

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑↑	↖↗	↗
Volume (vph)	404	443	129	396	347	141
Lane Group Flow (vph)	439	482	140	430	377	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)	40.1	40.1	24.0	64.1	25.9	90.0
Total Split (%)	44.6%	44.6%	26.7%	71.2%	28.8%	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	0.55	0.50	0.52	0.19	0.52	0.10
Control Delay	15.9	3.1	29.8	4.5	25.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	3.1	29.8	4.5	25.1	0.1
Queue Length 50th (ft)	114	0	53	26	70	0
Queue Length 95th (ft)	252	53	120	55	128	0
Internal Link Dist (ft)	714			1420	691	
Turn Bay Length (ft)						
Base Capacity (vph)	955	1046	502	2617	1091	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	0.46	0.46	0.28	0.16	0.35	0.10

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 62.7
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated

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



Queues

5: KAONOULU STREET & PIILANI HIGHWAY

5/30/2014

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	242	170	647	219	629	129	810	664	704	924	117
Lane Group Flow (vph)	80	263	185	703	238	684	140	880	722	765	1004	127
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)	16.0	14.0	14.0	23.0	21.0	25.0	14.0	28.0	23.0	25.0	39.0	39.0
Total Split (%)	17.8%	15.6%	15.6%	25.6%	23.3%	27.8%	15.6%	31.1%	25.6%	27.8%	43.3%	43.3%
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	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	Min	None	None	Min	Min
v/c Ratio	0.45	0.69	0.43	0.97	0.53	0.43	0.74	0.93	0.49	0.95	0.72	0.18
Control Delay	41.8	47.5	27.2	62.4	36.8	8.5	59.8	49.6	14.2	57.0	26.8	4.1
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	41.8	47.5	27.2	62.4	36.8	8.5	59.8	49.6	14.2	57.0	26.8	4.1
Queue Length 50th (ft)	43	76	74	205	122	67	78	256	132	222	251	0
Queue Length 95th (ft)	86	118	136	#319	#212	121	#166	#376	184	#337	325	34
Internal Link Dist (ft)		253			225			2017			2865	
Turn Bay Length (ft)												
Base Capacity (vph)	226	393	422	728	448	1596	197	947	1479	804	1394	700
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	0.35	0.67	0.44	0.97	0.53	0.43	0.71	0.93	0.49	0.95	0.72	0.18

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.6

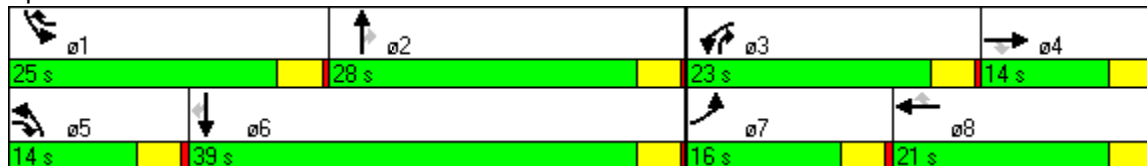
Natural Cycle: 100

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



Queues

6: KAONOULU STREET & SOUTH KIHEI ROAD

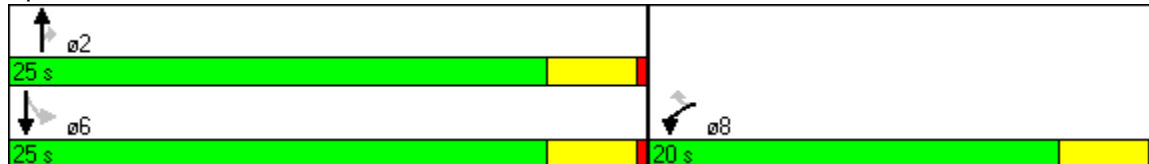
5/30/2014

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↖	↑	↗	↘	↓
Volume (vph)	207	123	536	233	153	455
Lane Group Flow (vph)	225	134	583	253	166	495
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	25.0	25.0	25.0	25.0
Total Split (%)	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
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	0.50	0.27	0.53	0.24	0.53	0.45
Control Delay	12.7	3.6	9.0	1.9	17.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	3.6	9.0	1.9	17.5	8.0
Queue Length 50th (ft)	35	0	69	0	19	55
Queue Length 95th (ft)	83	25	190	26	#110	151
Internal Link Dist (ft)	290		106			222
Turn Bay Length (ft)						
Base Capacity (vph)	613	636	1155	1078	331	1155
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	0.37	0.21	0.50	0.23	0.50	0.43

Intersection Summary

Cycle Length: 45
 Actuated Cycle Length: 41
 Natural Cycle: 50
 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



Queues

7: KULANIHAKOI STREET & PIILANI HIGHWAY

5/30/2014

								ø1	ø8
Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR		
Lane Configurations									
Volume (vph)	87	0	81	35	1613	1532	105		
Lane Group Flow (vph)	0	95	88	38	1753	1665	114		
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)	21.0	21.0	21.0	11.0	60.0	58.0	58.0	9.0	21.0
Total Split (%)	23.3%	23.3%	23.3%	12.2%	66.7%	64.4%	64.4%	10%	23%
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		0.52	0.31	0.28	0.62	0.66	0.10		
Control Delay		34.2	9.1	40.9	5.6	10.4	1.7		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		34.2	9.1	40.9	5.6	10.4	1.7		
Queue Length 50th (ft)		43	0	17	157	269	0		
Queue Length 95th (ft)		94	39	51	295	428	19		
Internal Link Dist (ft)		212			1953	2017			
Turn Bay Length (ft)									
Base Capacity (vph)		269	373	144	2850	2589	1188		
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		0.35	0.24	0.26	0.62	0.64	0.10		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 85.9
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated













Splits and Phases: 7: KULANIHAKOI STREET & PIILANI HIGHWAY



Queues

8: PIIKEA AVENUE & PIILANI HIGHWAY

5/30/2014

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	433	255	214	1319	1272	485
Lane Group Flow (vph)	471	277	233	1434	1383	527
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)	30.0	30.0	17.0	60.0	43.0	43.0
Total Split (%)	33.3%	33.3%	18.9%	66.7%	47.8%	47.8%
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	0.91	0.65	0.90	0.54
Control Delay	57.2	5.4	77.3	12.6	33.5	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	5.4	77.3	12.6	33.5	3.8
Queue Length 50th (ft)	259	0	132	246	373	0
Queue Length 95th (ft)	#444	56	#269	315	#519	56
Internal Link Dist (ft)	620			1070	1739	
Turn Bay Length (ft)						
Base Capacity (vph)	511	654	256	2202	1534	985
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	0.91	0.65	0.90	0.54

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

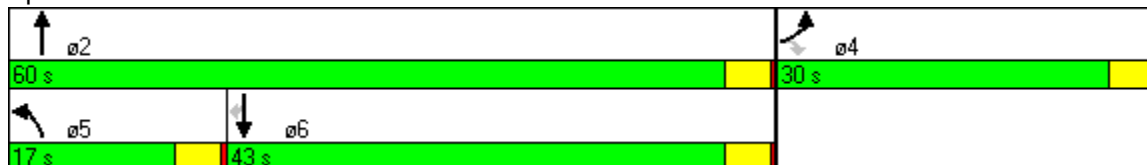
Natural Cycle: 75

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



Queues

12: UPCOUNTRY HIGHWAY & DRIVE A

5/30/2014

									ø1	ø3
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR		
Lane Configurations	 	 		 	 		 			
Volume (vph)	414	277	442	589	518	60	55	170		
Lane Group Flow (vph)	450	301	480	640	563	65	60	185		
Turn Type	Prot		Prot		Prot			Perm		
Protected Phases	7	4	4	8	5	2	6		1	3
Permitted Phases								6		
Detector Phases	7	4	4	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	20.0	8.0	20.0	20.0	20.0	8.0	8.0
Total Split (s)	21.0	37.0	37.0	24.0	25.0	37.0	20.0	20.0	8.0	8.0
Total Split (%)	23.3%	41.1%	41.1%	26.7%	27.8%	41.1%	22.2%	22.2%	9%	9%
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	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.76	0.20	0.50	0.84	0.78	0.07	0.14	0.37		
Control Delay	41.4	15.7	3.5	43.1	38.6	14.1	32.1	7.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	41.4	15.7	3.5	43.1	38.6	14.1	32.1	7.6		
Queue Length 50th (ft)	124	51	0	182	153	20	29	0		
Queue Length 95th (ft)	175	77	52	#264	208	43	64	55		
Internal Link Dist (ft)		86		399		103	80			
Turn Bay Length (ft)										
Base Capacity (vph)	648	1535	958	791	801	892	419	500		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.69	0.20	0.50	0.81	0.70	0.07	0.14	0.37		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green

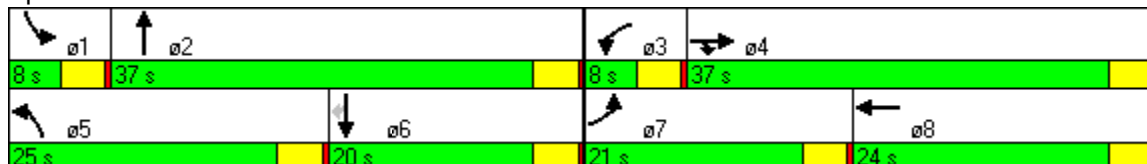
Natural Cycle: 70

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.





















Queue shown is maximum after two cycles.

Splits and Phases: 12: UPCOUNTRY HIGHWAY & DRIVE A















HCM Unsignalized Intersection Capacity Analysis
 9: KAONOULU STREET & KENOLIO ROAD

5/28/2014

												
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	342	11	25	323	81	9	9	28	118	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	372	12	27	351	88	10	10	30	128	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)					333							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	439			384			857	923	378	909	885	395
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	390			384			844	917	378	901	875	342
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			96	96	95	40	98	97
cM capacity (veh/h)	1075			1175			240	239	669	213	252	644
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	26	384	27	439	10	40	128	24				
Volume Left	26	0	27	0	10	0	128	0				
Volume Right	0	12	0	88	0	30	0	18				
cSH	1075	1700	1175	1700	240	465	213	476				
Volume to Capacity	0.02	0.23	0.02	0.26	0.04	0.09	0.60	0.05				
Queue Length 95th (ft)	2	0	2	0	3	7	86	4				
Control Delay (s)	8.4	0.0	8.1	0.0	20.6	13.5	44.8	13.0				
Lane LOS	A		A		C	B	E	B				
Approach Delay (s)	0.5		0.5		14.9		39.8					
Approach LOS					B		E					
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			41.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 10: KAONOULU STREET & ALULIKE STREET

5/28/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	70	379	10	6	347	8	5	4	7	7	3	90
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)	76	412	11	7	377	9	5	4	8	8	3	98
Approach Volume (veh/h)		499			392			17			109	
Crossing Volume (veh/h)		17			86			496			389	
High Capacity (veh/h)		1366			1295			937			1020	
High v/c (veh/h)		0.37			0.30			0.02			0.11	
Low Capacity (veh/h)		1144			1080			757			831	
Low v/c (veh/h)		0.44			0.36			0.02			0.13	
Intersection Summary												
Maximum v/c High			0.37									
Maximum v/c Low			0.44									
Intersection Capacity Utilization			40.2%		ICU Level of Service					A		







HCM Unsignalized Intersection Capacity Analysis
 13: UPCOUNTRY HIGHWAY & DRIVE B SOUTH

5/28/2014

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1134	479	0	1496	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1233	521	0	1626	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					0.83	
vC, conflicting volume			1753		2046	616
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1753		2055	616
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)			353		40	433
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	616	616	521	813	813	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	521	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.36	0.36	0.31	0.48	0.48	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			44.7%		ICU Level of Service	A
Analysis Period (min)			15			






















HCM Unsignalized Intersection Capacity Analysis
 14: UPCOUNTRY HIGHWAY & DRIVE B NORTH

5/28/2014

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1234	1277	0	0	219
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1341	1388	0	0	238
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				0.83	0.83
vC, conflicting volume	1388				2059	694
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1261				2071	424
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	50
cM capacity (veh/h)	453				39	479
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	671	671	694	694	0	238
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	238
cSH	1700	1700	1700	1700	1700	479
Volume to Capacity	0.39	0.39	0.41	0.41	0.00	0.50
Queue Length 95th (ft)	0	0	0	0	0	68
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	19.7
Lane LOS						C
Approach Delay (s)	0.0		0.0			19.7
Approach LOS						C
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			55.5%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: UPCOUNTRY HIGHWAY & DRIVE C

5/28/2014

												
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)	78	31	168	0	62	0	456	0	0	0	0	71
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)	85	34	183	0	67	0	496	0	0	0	0	77
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)		479										
pX, platoon unblocked												
vC, conflicting volume	67			216			314	271	34	271	453	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	67			216			314	271	34	271	453	34
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			9	100	100	100	100	93
cM capacity (veh/h)	1532			1351			545	600	1032	632	473	1032
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2		
Volume Total	85	34	183	0	45	22	496	0	0	77		
Volume Left	85	0	0	0	0	0	496	0	0	0		
Volume Right	0	0	183	0	0	0	0	0	0	77		
cSH	1532	1700	1700	1700	1700	1700	545	1700	1700	1032		
Volume to Capacity	0.06	0.02	0.11	0.00	0.03	0.01	0.91	0.00	0.00	0.07		
Queue Length 95th (ft)	4	0	0	0	0	0	272	0	0	6		
Control Delay (s)	7.5	0.0	0.0	0.0	0.0	0.0	47.0	0.0	0.0	8.8		
Lane LOS	A						E	A	A	A		
Approach Delay (s)	2.1			0.0			47.0		8.8			
Approach LOS							E		A			
Intersection Summary												
Average Delay			26.2									
Intersection Capacity Utilization			43.0%				ICU Level of Service		A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: UPCOUNTRY HIGHWAY & DRIVE D

5/28/2014

	→	↘	↙	←	↖	↗
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 M-1
Traffic Impact Assessment Report Update
Dated December 20, 2016

Revised
FINAL

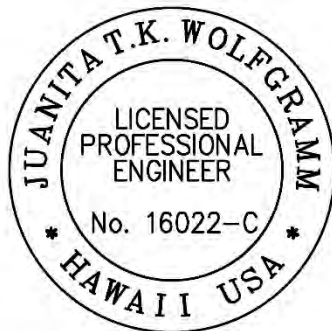
Pi'ilani Promenade
Traffic Impact Analysis Report
Update

Kihei, Maui

December 20, 2016

Prepared for
Pi'ilani Promenade North LLC
Pi'ilani Promenade South LLC
Sarofim Realty Advisors

Prepared by
SSFM
International



*This work was prepared by me
or under my supervision:*

Juanita T.K. Wolfgramm

Juanita T.K. Wolfgramm

Date: 12/20/2016

Licensed Professional Engineer

License Number 16022

Expires: 4/30/2018

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I. INTRODUCTION

Pi'ilani Promenade is a planned multi-use development proposed on 68-acres of undeveloped land in Kihei on the island of Maui (see project location map in Figure 1). Pi'ilani Promenade is proposing to include 530,000 square feet of commercial area, 5 acres of light industrial uses, and 226 units of one and two-bedroom rental apartments (see site plan in Figure 2). The project site is approximately 10 miles south of Kahului Airport on the east side of Pi'ilani Highway with access coming off of Pi'ilani Highway through the intersection with Kaonoulu Street.

The developer anticipates having a full build-out and occupancy by the year 2032. Access to and from the project will be from an easterly extension of Kaonoulu Street, which will be called East Kaonoulu Street. Hawai'i Department of Transportation (HDOT) plans are for a future extension of East Kaonoulu Street to provide a mauka-makai (mountain to ocean) connector between Kihei and Upcountry Maui. The full construction of East Kaonoulu Street to Upcountry Maui is not currently funded and, therefore, the traffic impact of the full construction of this road will not be included in the analysis of future conditions for the year 2032.

A traffic impact analysis report (TIAR) was completed by Phillip Rowell Associates (PRA) in June 6, 2014 for Pi'ilani Promenade. HDOT provided comments on the report in a letter dated October 6, 2014 letter. Subsequent coordination between HDOT, the owner, and traffic engineer resulted in a comment-response matrix (see Appendix A) that addressed outstanding concerns and ways to resolve concerns.

This current report is an update to the June 6, 2014 TIAR. It will evaluate existing (2016) conditions, assess impacts to the surrounding area as a result of the proposed development and changes associated with anticipated surrounding area development. As stated previously, the proposed master planned project includes multifamily residential, light industrial and business commercial uses. The initial phases of the project are proposed to include multifamily rental units as well as the light industrial and a portion of the business commercial component of the project. There is an existing demand for the multifamily rental housing on Maui which is addressed in the initial phases. The light industrial and business commercial components of the project will be developed as driven by market demand for such space.

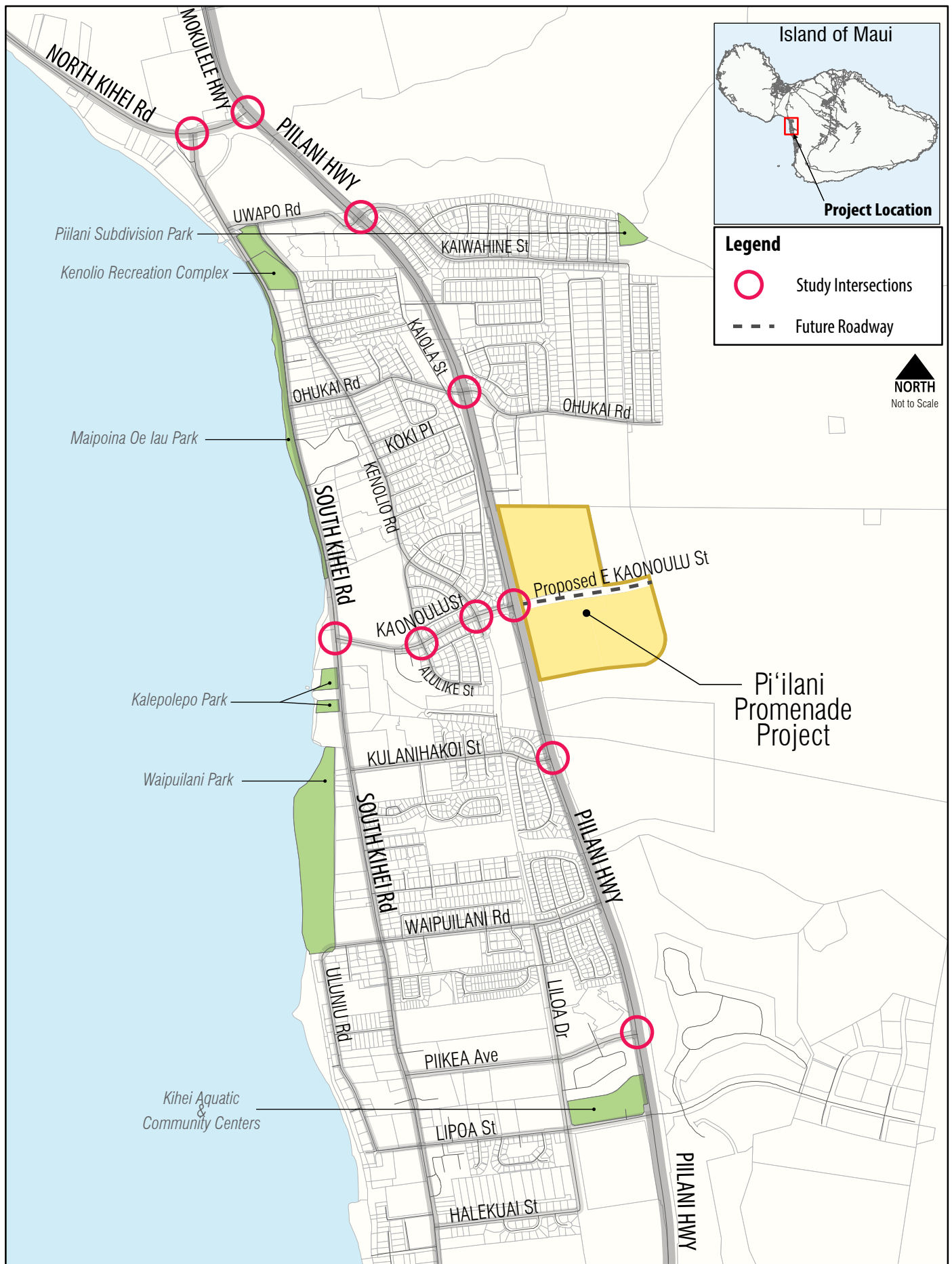


Figure 1: Project Location Map

Pi'ilani Promenade – Kihei, Maui



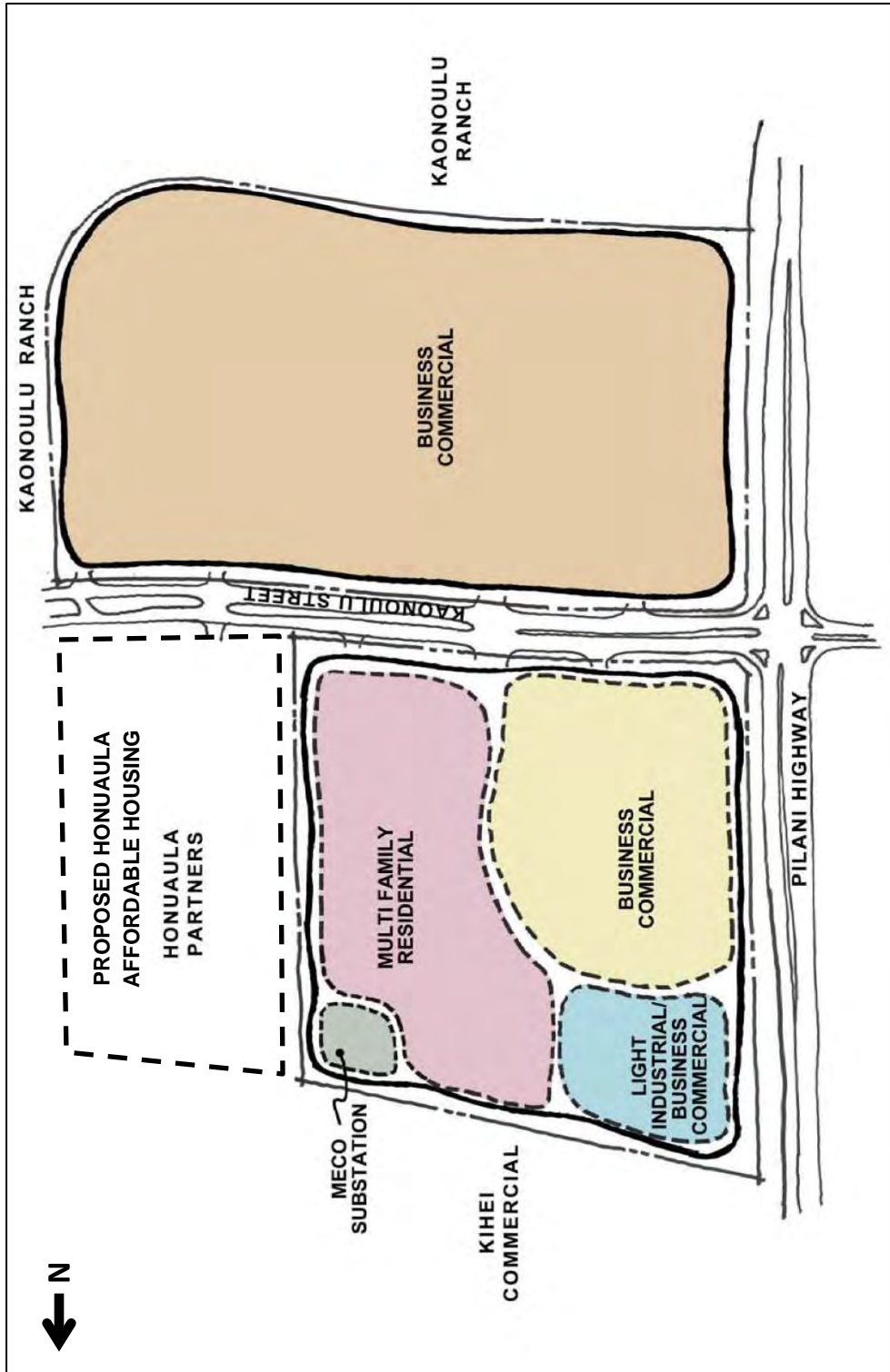


Figure 2: Site Plan

II. EXISTING (2016) CONDITIONS

The area surrounding the project site is suburban in nature, consisting of single family and multi-family homes with some commercial uses that include shopping and resort hotels. Pi'ilani Highway is the primary arterial that provides north-south access along the mauka side of Kihei. South Kihei Road runs parallel to Pi'ilani Highway along the coast, and provides more direct access to residential, commercial, and beach uses. Mauka-makai connectors such as Kaonoulu Street exist every ¼-mile to ½-mile and are controlled by stop signs or traffic signals at the major intersections.

A. Existing Geometric Configuration

1. Existing Roadway Configuration

Pi'ilani Highway (State Route 31) is a four-lane, undivided highway, near the project site, 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 (mph) south of Kaiwahine Street/Uwapo Road and 45 mph north of Kaiwahine Street/Uwapo Road.

Ohukai Road is a two-lane, two-way street, but widens to provide two approach lanes as it approaches Pi'ilani Highway. The posted speed limit is 20 mph.

Kaonoulu Street currently connects Pi'ilani 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 mph.

Kaiwahine Street is a two-lane, two-way residential collector street. The posted speed limit is 20 mph. Residential parking is allowed along both sides of the street.

Uwapo Road is an extension of Kaiwahine Street west of Pi'ilani 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.

Kulanihakoi Street currently connects Pi'ilani Highway with South Kihei Road. It is a two-lane, two-way street. Residential parking is allowed on both sides of the street. The posted speed limit is 20 mph.

Pi'ikea Avenue also connects Pi'ilani Highway with South Kihei Road. It is a four-lane, two-way street between Pi'ilani Highway and Liloa Drive. This segment provides access to commercial areas on the north side of Pi'ikea Avenue and to multifamily residential units on the south side. There is a roundabout at the intersection with Liloa Drive with rectangular rapid flashing beacons for each pedestrian crossing. Pi'ikea Avenue becomes a two-lane, two-way street between Liloa Drive and South Kihei Road. The posted speed limit is 20 mph.

South Kihei Road is a two-lane, two-way roadway which starts at North Kihei Road on the north and travels south through Kihei. This roadway provides access to residential, commercial, parks and hotel areas. The posted speed limit is 30 mph.

North Kihei Road is primarily an undivided, two-lane, two-way street. The posted speed limit is 30 mph near South Kihei Road and Mokulele Highway and is 45 mph west of South Kihei Road. There is a center lane that provides left turns for opposing directions west of South Kihei Road to access beach front hotels.

2. Existing Intersection Configuration

Primary study intersections in the project area, based on prior consultation with HDOT, include the following:

1. South Kihei Road and North Kihei Road
2. Pi'ilani Highway and North Kihei Road
3. Pi'ilani Highway and Uwapo Road/Kaiwahine Street
4. Pi'ilani Highway and Ohukai Road
5. Pi'ilani Highway and Kaonoulu Street
6. Pi'ilani Highway and Kulanihakoi Street
7. Pi'ilani Highway and Pi'ikea Avenue
8. Kaonoulu Street and Kenolio Road
9. Kaonoulu Street and Alulike Street
10. Kaonoulu Street and South Kihei Road

Existing (2016) lane configurations, marked pedestrian crosswalks, and traffic controls at the study intersections are shown in Figure 3.

The study intersections were selected in consultation with HDOT. There are no signalized intersections north of North Kihei Road or west of South Kihei Road for several miles. The intersection of Pi'ilani Highway at Pi'ikea Avenue is the southernmost intersection and is approximately 1.25 miles from the project.

The intersection of Pi'ilani 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 Pi'ilani 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 Pi'ilani Highway. The northbound and southbound left turns are protected. Recent construction added dedicated left-turn lanes for the eastbound and westbound approaches with a through lane and separate right turn lane. The eastbound and westbound left turn traffic signals are protected only.

The intersection of Pi'ilani Highway at Kaiwahine Street and Uwapo Road is located approximately 1,290 feet north of Ohukai Road along Pi'ilani Highway. The intersection is a four-leg signalized intersection. The northbound and southbound approaches are Pi'ilani 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 Pi'ilani 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 Pi'ilani Highway at North Kihei Road is located approximately 2,175 feet north of Uwapo Road along Pi'ilani Highway. The intersection is a four-legged signalized intersection. The northbound approach is Pi'ilani 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, two through lanes and a 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, a shared through/left turn lane and two right turn lanes. Right turns are allowed on right turn green arrows only. The westbound approach is a left turn lane and a shared through/right turn lane.

The intersection of North Kihei Road at South Kihei Road is located approximately 1,500 feet west of Pi'ilani 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 Pi'ilani Highway at Kaonoulu Street is a three-legged unsignalized intersection. The northbound and southbound approaches are Pi'ilani Highway and the eastbound approach is Kaonoulu Street. 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 the stop sign controlled approach and has one left turn lane and one right turn lane. The eastbound and southbound right turns are channelized.

The intersection of Pi'ilani Highway at Kulanihakoi Street is located approximately 2,100 feet south of Kaonoulu Street along Pi'ilani Highway. The intersection is a three-legged unsignalized intersection. The northbound and southbound approaches are Pi'ilani 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 Street and is the stop sign controlled approach. The Kulanihakoi Street approach has one left turn lane and one right turn lane. There is a refuge lane for the eastbound left turning movements. The eastbound and southbound right turns are channelized.

The intersection of Pi'ilani Highway at Pi'ikea Avenue is located approximately 3,850 feet south of Kulanihakoi Street. The intersection is a three-legged signalized intersection. The northbound and southbound approaches are Pi'ilani Highway and the eastbound approach is Pi'ikea Avenue. The northbound approach has 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 eastbound and southbound right turns are channelized.

The intersection of South Kihei Road at Kaonoulu Street is located approximately 3,230 along Kaonoulu Street west of Pi'ilani 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 shared through/right turn lane. The southbound approach has one shared through/left turn 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 Pi'ilani 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 a shared through/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 a shared through/right turn lane. The northbound and southbound approaches are the controlled approaches and each have one lane for all movements.

B. Existing Traffic Volumes

1. Existing 24-Hour Roadway Volumes

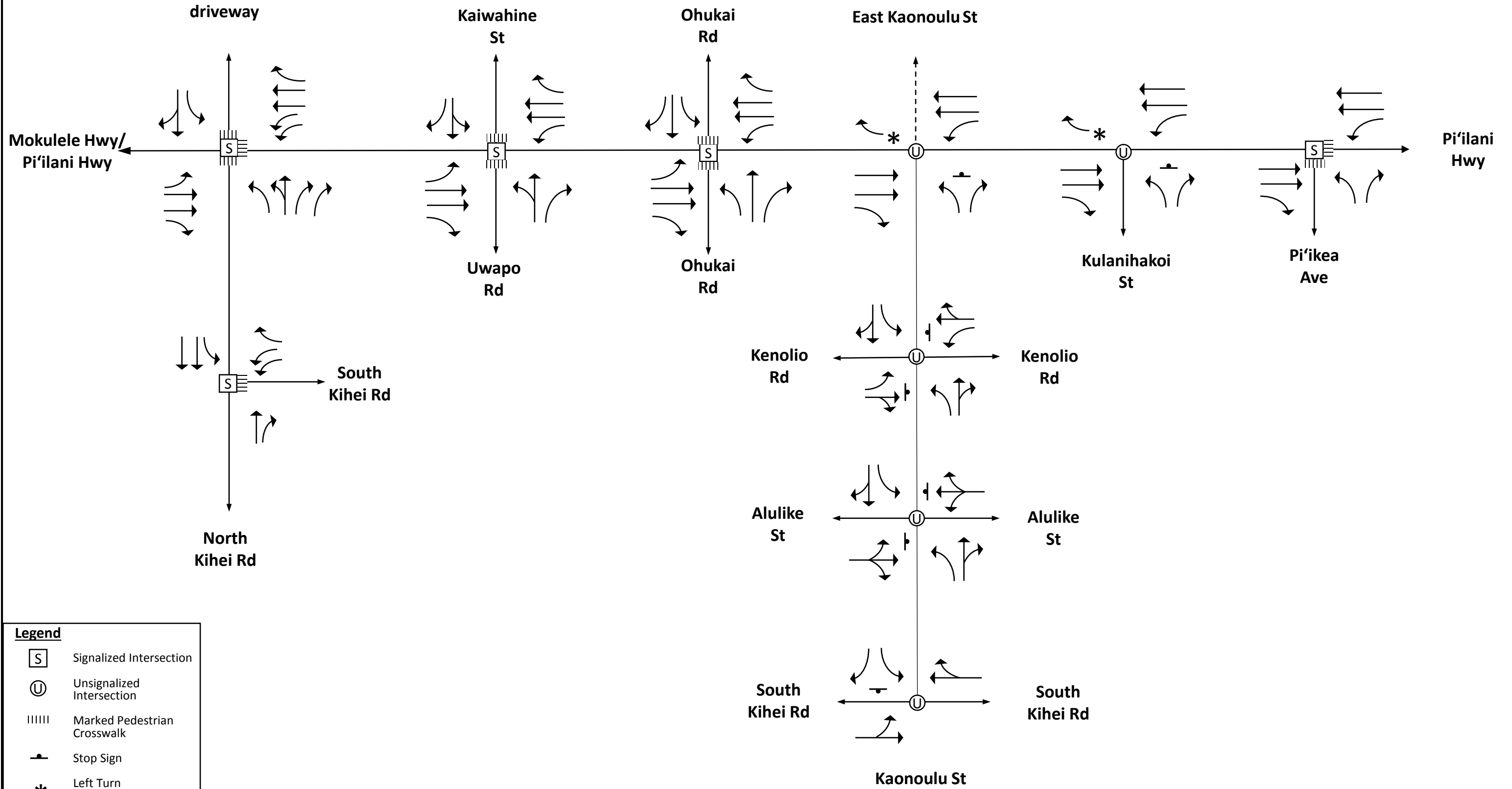
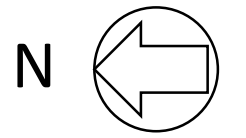
Average daily traffic (ADT) along Pi'ilani Highway between Kaonoulu Street and Kulanihakoi Street taken from HDOT *Historical Traffic Station Maps* is shown in Table 1. The 2013 ADT along Pi'ilani Highway, is approximately 34,100 vehicles per day (vpd). No weekend 24-hour roadway data are available from HDOT. Detailed 24-hour counts are included in Appendix B.

Table 1: Existing Roadway ADT

Roadway	Station	Location	Year	ADT
Pi'ilani Highway	B74 0031 00000	Between Kaonoulu Street and Kulanihakoi Street	2013	34,100

Source: *Historical Traffic Station Maps* (HDOT)

PROPOSED PROJECT SITE



Legend

	Signalized Intersection
	Unsignalized Intersection
	Marked Pedestrian Crosswalk
	Stop Sign
	Left Turn Refuge Lane

Figure 3: Existing (2016) Lane Configuration

Pi'ilani Promenade - Kihei, Maui

2. Existing Peak Hour Volumes

Intersection peak period turning movement traffic counts were taken on Tuesday, January 12, 2016. These counts also included the tabulation of heavy vehicles, bicycles, and pedestrian movements at all intersections. Counts were taken during the AM and PM peak periods on a weekday from 6:00 to 9:00 AM and 3:00 to 6:00 PM, respectively and during the mid-day peak period on a Saturday from 10:00 AM to 2:00 PM.

Peak hours varied per intersection and are provided in Table 2. AM, PM and Saturday peak hour vehicular volumes are shown in Figure 4, Figure 5 and Figure 6, respectively. Appendix B includes the detailed traffic count data.

Table 2: Intersection Peak Hours

Intersection	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Pi'ilani Highway and Ohukai Road	7:15 – 8:15 AM	3:15 – 4:15 PM	11:45 AM – 12:45 PM
Pi'ilani Highway and Kaiwahine Street	7:15 – 8:15 AM	3:30 – 4:30 PM	11:15 AM – 12:15 PM
Pi'ilani Highway and North Kihei Road/Mokulele Highway	7:15 – 8:15 AM	3:30 – 4:30 PM	11:15 AM – 12:15 PM
North Kihei Road and South Kihei Road	7:00 – 8:00 AM	3:45 – 4:45 PM	12:30 – 1:30 PM
Pi'ilani Highway and Pi'ikea Avenue	7:30 – 8:30 AM	3:30 – 4:30 PM	12:00 – 1:00 PM
Pi'ilani Highway and Kaonoulu Street	7:15 – 8:15 AM	3:15 – 4:15 PM	11:15 AM – 12:15 PM
South Kihei Road and Kaonoulu Street	7:15 – 8:15 AM	4:30 – 5:30 PM	12:15 – 1:15 PM
Pi'ilani Highway and Kulanihakoi Street	7:15 – 8:15 AM	3:15 – 4:15 PM	11:00 AM – 12:00 PM
Kenolio Road and Kaonoulu Street	7:15 – 8:15 AM	4:45 – 5:45 PM	10:15 – 11:15 AM
Alulike Street and Kaonoulu Street	8:00 – 9:00 AM	4:45 – 5:45 PM	10:00 – 11:00 AM

PROPOSED PROJECT SITE

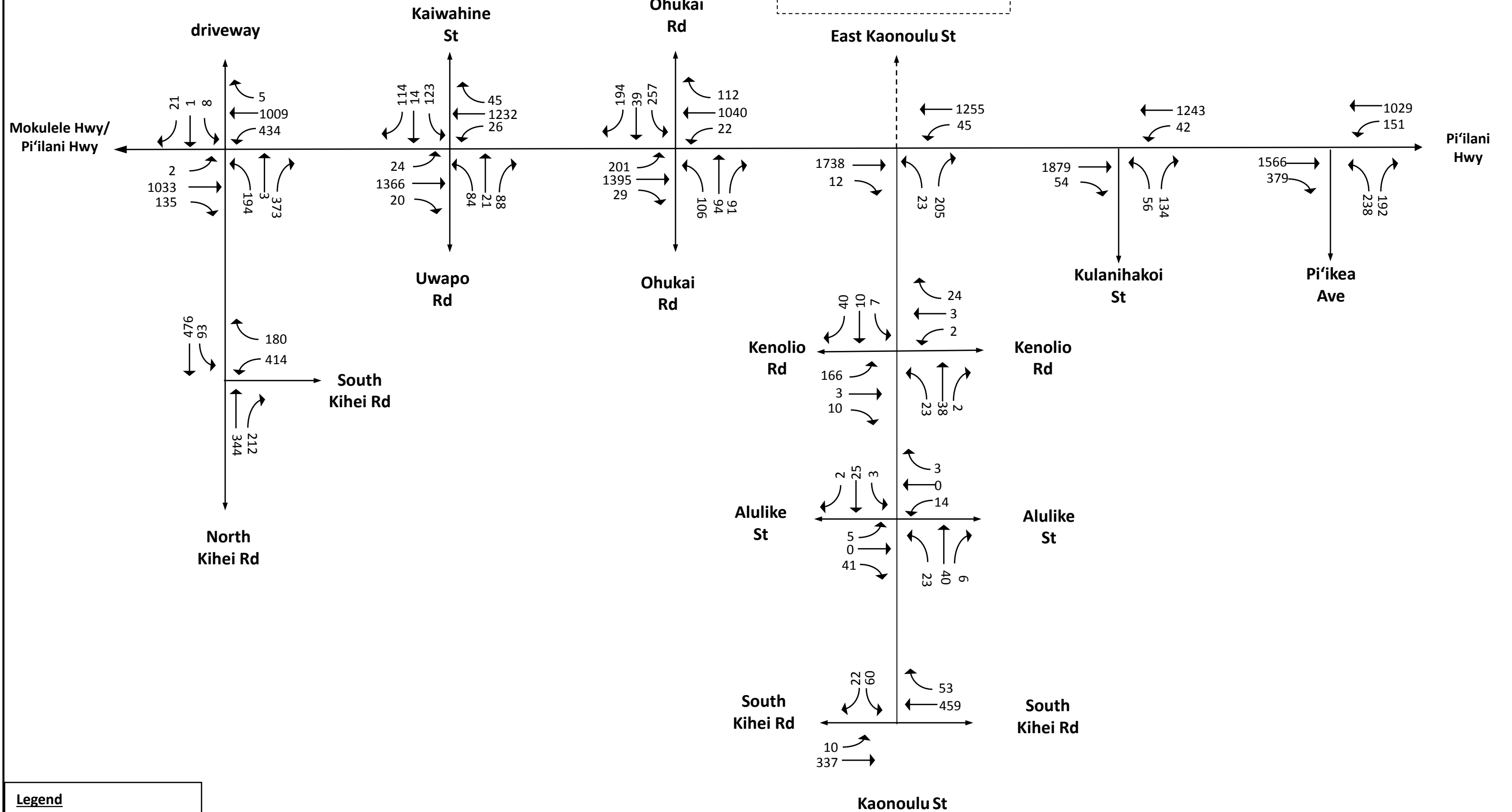
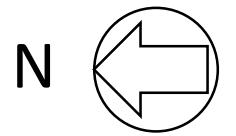


Figure 4: Existing (2016) AM Peak Hour Volumes

Pi'ilani Promenade - Kihei, Maui

PROPOSED PROJECT SITE

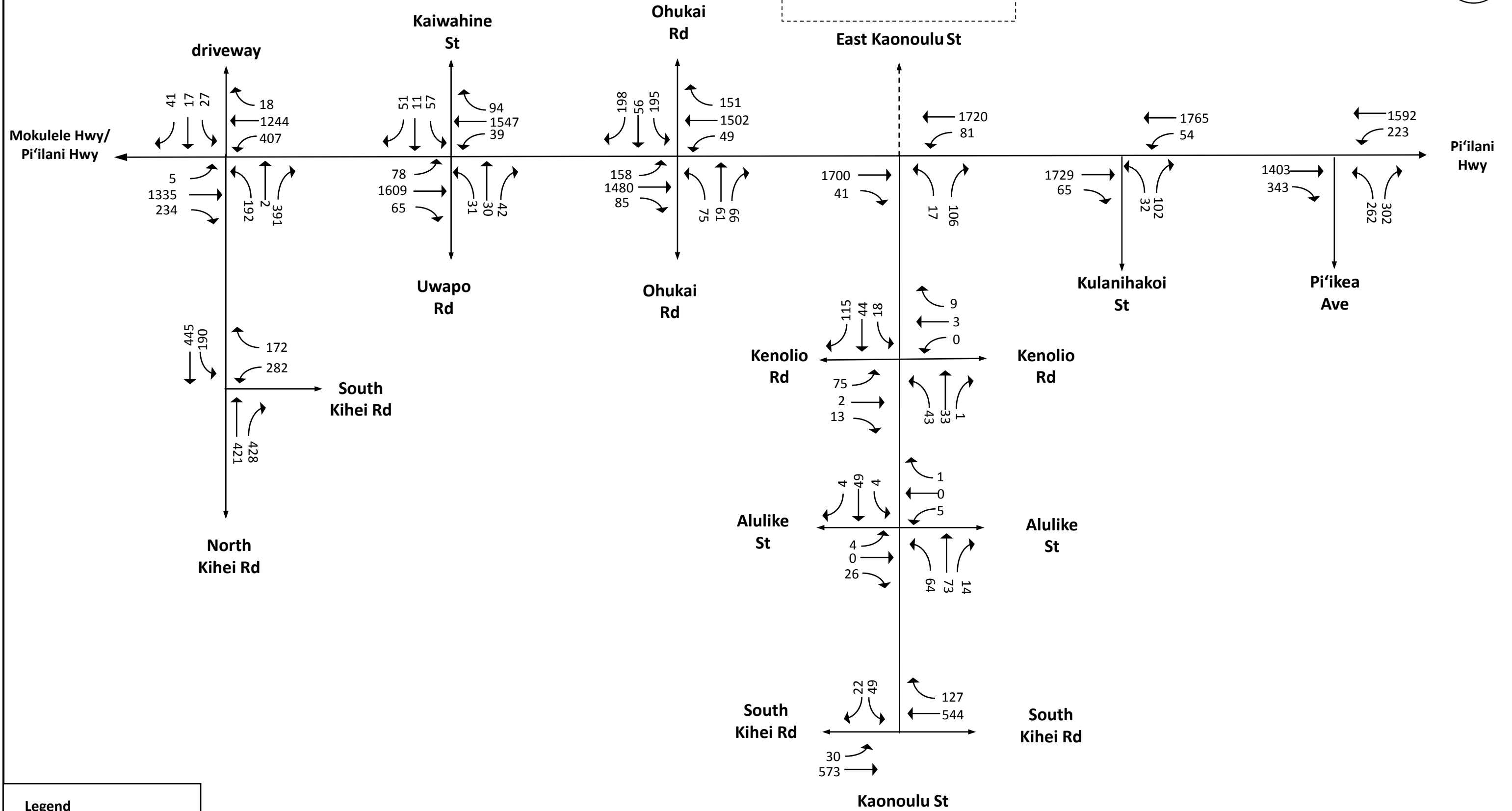
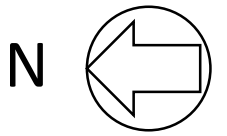


Figure 5: Existing (2016) PM Peak Hour Volumes

Pi'ilani Promenade - Kihei, Maui

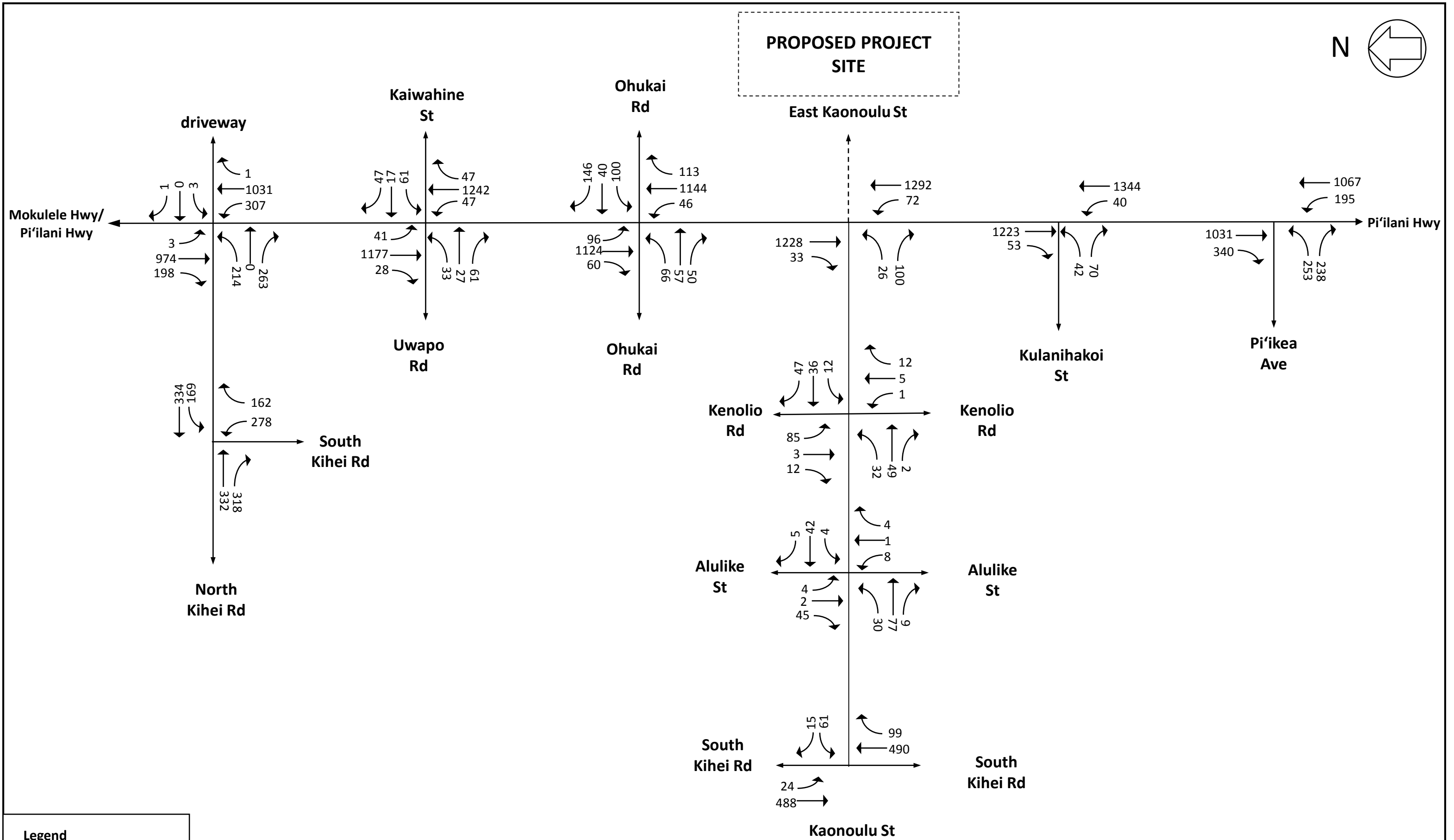


Figure 6: Existing (2016) Saturday Peak Hour Volumes

Pi'ilani Promenade - Kihei, Maui

3. Existing Multi-Modal Volumes

a) Heavy Vehicles and Buses

Heavy vehicles included public transit buses, tourist bus/trolleys, delivery trucks, and other large commercial vehicles. The heavy vehicle intersection peak hour volume and percentage of heavy vehicles compared to the total vehicles counted is shown in Table 3. The percentages of heavy vehicles counted are relatively small, ranging from 0.4% to 2.5%.

Table 3: Existing Intersection Peak Hour Heavy Vehicle Volumes and Percentage

Intersection	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
	Volume	%	Volume	%	Volume	%
Pi'ilani Highway and Ohukai Road	69	1.9	67	1.6	42	1.4
Pi'ilani Highway and Kaiwahine Street	62	2.0	68	1.9	24	0.8
Pi'ilani Highway and North Kihei Road/Mokulele Highway	72	2.2	81	2.1	39	1.3
North Kihei Road and South Kihei Road	25	1.5	26	1.3	21	1.3
Pi'ilani Highway and Pi'ikea Avenue	70	2.0	52	1.3	31	1.0
Pi'ilani Highway and Kaonoulu Street	66	2.0	66	1.8	31	1.1
South Kihei Road and Kaonoulu Street	11	1.2	8	0.6	13	1.1
Pi'ilani Highway and Kulanihakai Street	66	1.9	66	1.8	30	1.1
Kenolio Road and Kaonoulu Street	3	0.9	0	0.0	2	0.7
Alulike Street and Kaonoulu Street	4	2.5	1	0.4	2	0.9

The County of Maui public transit, Maui Bus, has two routes in the project area: Kihei Islander Route 10 and Kihei Villager Route 15. Both routes travel along South Kihei Road in the northbound and southbound directions. Route 10 has two busses running continuously along South Kihei Road from the Queen Ka'ahumanu Center to Wailea Ike Drive throughout the day from 5:30 AM to 9:30 PM. Within the study area there are seven bus stops each in the northbound and southbound direction. Route 15 has one bus running continuously along Kihei Road from Ma'alaea Harbor Village to the Pi'ilani Shopping Center. The two routes share stops along South Kihei Road from Uwapo Road to Pi'ilani Shopping Center. The bus runs from 6:05 AM to 8:55 PM. Table 4 provides ridership at several stops within or near the study area. Appendix C includes bus route maps and timetables.

Table 4: Bus Daily Ridership

Stop # (Geoid)	Maui Bus Stop	Daily Totals	
		Boarding	Alighting
1036	Uwapo St/S. Kihei Rd	39	34
1039	Ohukai Rd/S. Kihei Rd	28	22
1041	Kaonoulu St/S. Kihei Rd	16	25
1043	Kulanihakoi St/S. Kihei Rd	22	45
1045	Waipuilani Rd/S. Kihei Rd	17	58
1047	Pi'ikea Ave/S. Kihei Rd	20	51
1038	Pi'ilani Shopping Center	109	102
1181	Lipoa St/Haggai Institute	6	3
1048	St Theresa's Church	17	17
1051	Welakahoa Rd/S. Kihei Rd	7	15
1050	Welakahoa Rd/S. Kihei Rd	12	3
1129	Lipoa St	11	26
1182	Lipoa St/Liloa Dr	8	3
1046	Pi'ikea Ave/S. Kihei Rd	54	4
1044	Waipuilani Rd/S. Kihei Rd	18	6
1042	Kulanihakoi St/S. Kihei Rd	22	16
1040	Kaonoulu St/S. Kihei Rd	22	31
1037	Ohukai St/S. Kihei Rd	29	31
1035	Uwapo Rd/S. Kihei Rd	36	39
1034	Ma'alaea Harbor Village/Maui Ocean Ctr	68	54
Totals		561	585

Source: County of Maui, Maui Bus Public Transit System (2014)

b) Pedestrians

Small pedestrian volumes were counted at most study intersections during the AM, PM and Saturday peak hours (see Table 5). This is a result of the lack of sidewalks or pedestrian facilities, and the suburban nature of the development along Pi'ilani Highway and areas in mauka Kihei. Conditions and resources along South Kihei Road are more amenable to pedestrian use which is reflected in the higher volume at the one intersection. Other intersections with higher pedestrian volumes were located in the more residential areas.

Table 5: Existing Intersection Peak Hour Pedestrian Volumes

Intersection	Peak Hour Pedestrian Volumes		
	AM	PM	Saturday
Pi'ilani Highway and Ohukai Road	9	8	8
Pi'ilani Highway and Kaiwahine Street	17	11	5
Pi'ilani Highway and North Kihei Road/Mokulele Highway	2	2	0
North Kihei Road and South Kihei Road	1	0	2
Pi'ilani Highway and Pi'ikea Avenue	2	3	5
Pi'ilani Highway and Kaonoulu Street	1	1	0
South Kihei Road and Kaonoulu Street	24	21	18
Pi'ilani Highway and Kulanihakoi Street	0	0	0
Kenolio Road and Kaonoulu Street	18	10	8
Alulike Street and Kaonoulu Street	20	14	5

c) Bicycles

Moderate bicycle volumes were counted at the project intersections during the AM, PM and Saturday peak hours (see Table 6) near the project area. Saturday volumes were higher than weekday which is reflective of the use of the roads more for recreational riding than commuting. Pi'ilani Highway is a designated bike route with designated travel in the paved shoulders.

Table 6: Existing Intersection Peak Hour Bicycle Volumes

Intersection	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Pi'ilani Highway and Ohukai Road	10	11	12
Pi'ilani Highway and Kaiwahine Street	14	11	18
Pi'ilani Highway and North Kihei Road/Mokulele Highway	10	9	36
North Kihei Road and South Kihei Road	18	10	17
Pi'ilani Highway and Pi'ikea Avenue	6	8	9
Pi'ilani Highway and Kaonoulu Street	9	9	11
South Kihei Road and Kaonoulu Street	21	14	29
Pi'ilani Highway and Kulanihakoi Street	9	9	9
Kenolio Road and Kaonoulu Street	4	5	2
Alulike Street and Kaonoulu Street	4	6	8

C. Existing Intersection Level of Service

1. LOS Methodology

Level of service (LOS) is an operational analysis rating system used in traffic engineering to measure the effectiveness of vehicular roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. Guidelines from *A Policy on*

Geometric Design of Highways and Streets (AASHTO, 2011) states that appropriate LOS for an urban arterial or collector is LOS D or better. Therefore, study intersections will be studied for adherence to this operating level.

a) Two-Way Stop Controlled Intersection LOS

The *Highway Capacity Manual* (TRB, 2010) (referred to hereafter as *HCM*) states that LOS for a two-way stop controlled (TWSC) intersection is determined by the measured control delay (see Table 7). It is defined for each minor movement, not for the intersection as a whole. Vehicles traveling along the major, free-flow road of a TWSC intersection proceed through with minimal delay. Those vehicles approaching the intersection along the minor movement are controlled by a stop sign and thus experience delay attributable to the volume of vehicles passing along the free-flow road and the gaps available.

Table 7: LOS Criteria for Unsignalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

Source: *HCM* (TRB, 2010)

b) Signalized Intersection LOS

The LOS analysis for signalized intersections is based on the average total vehicle delay based on the methodologies of the *HCM* (TRB, 2010) shown in Table 8. High numbers of vehicles passing the intersection, long cycle lengths, inappropriate signal phasing, or a poor signal progression can result in long delays, and consequently poor LOS.

Table 8: LOS Criteria for Signalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Source: *HCM* (TRB, 2010)

Another measure of intersection operation is the volume to capacity (v/c) ratio. This is the ratio of the volume of traffic utilizing the intersection compared to the maximum volume of vehicles that can be accommodated by the intersection during a specific period of time. A v/c ratio under 0.85 means the intersection is operating under capacity and excessive delays are not experienced. An intersection is operating near its capacity when v/c ratios range from 0.85 to 0.95. Unstable flows are expected when the v/c ratio is between 0.95 and 1.0. Any v/c ratio greater than or equal to 1.0 indicates that the intersection is operating at or above capacity which results in a LOS F per the *HCM* (TRB, 2010). A traffic movement can have a poor LOS but low v/c which suggests that the traffic volumes along that movement are low but have to wait a long time to make the movement. This is common for low volume protected turn movements or side streets that have to wait through a long cycle length for their split to come up.

2. Existing Intersection LOS Conditions

Existing (2016) unsignalized and signalized intersection LOS, v/c ratio and delay were determined for the weekday AM and PM and weekend (Saturday) mid-day peak hours (see Table 9). All signalized intersection LOS resulted in LOS D or better; however, individual traffic movements for the signalized and unsignalized intersections resulted in LOS E or F conditions with some having v/c greater than 1.0. The worst conditions were seen for the minor movements at the unsignalized intersections of Pi'ilani Highway at Pi'ikea Avenue, Pi'ilani Highway at Kaonoulu Street, and Pi'ilani Highway at Kulanihako'i Street which resulted in LOS F conditions and high v/c. Detailed analysis reports for these intersections during Existing (2016) conditions are provided in Appendix D.

Table 9: Existing (2016) Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Ohukai Road	Signalized		47.3	-	D	26.0	-	C	24.2	-	C
	EB	L	64.3	0.74	E	77.7	0.71	E	52.6	0.65	D
		T	51.4	0.42	D	62.9	0.32	E	31.3	0.20	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	82.4	0.92	F	87.9	0.86	F	43.0	0.68	D
		T	40.0	0.10	D	52.6	0.18	D	28.9	0.12	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	57.4	0.25	E	68.4	0.44	E	36.5	0.29	D
		T	31.3	0.71	C	29.9	0.79	C	24.9	0.78	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	73.0	0.84	E	78.1	0.85	E	32.8	0.37	C
		T	47.5	0.79	D	1.7	0.72	A	18.4	0.67	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*

Table 9 (Continued): Existing (2016) Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Uwapo Road/ Kaiwahine Street	Signalized		6.1	-	A	5.5	-	A	8.3	-	A
	EB	LT	52.7	0.43	D	69.9	0.41	E	28.4	0.25	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	LT	56.1	0.60	E	71.6	0.48	E	29.0	0.32	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	58.9	0.48	E	71.1	0.64	E	30.3	0.45	C
		T	0.5	0.50	A	6.1	0.57	A	6.3	0.54	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	59.3	0.46	E	71.9	0.73	E	30.6	0.42	C
		T	0.7	0.56	A	5.1	0.57	A	6.3	0.51	A
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and North Kihei Road	Signalized		19.3	-	B	22.4	-	C	15.7	-	B
	EB	LT	56.6	0.64	E	69.0	0.67	E	37.8	0.58	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	58.2	0.12	E	70.0	0.30	E	40.6	0.06	D
		TR	62.0	0.35	E	90.9	0.69	F	41.3	0.02	D
	NB	L	47.7	0.86	D	60.3	0.87	E	37.1	0.71	D
		T	0.4	0.42	A	0.5	0.49	A	7.1	0.45	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	98.2	0.53	F	93.5	0.56	F	67.4	0.53	E
		T	17.3	0.54	B	20.3	0.65	C	13.1	0.52	B
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
South Kihei Road and North Kihei Road	Signalized		26.0	-	C	31.2	-	C	12.2	-	B
	EB	T	8.9	0.29	A	12.3	0.35	B	11.6	0.51	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	56.1	0.78	E	60.0	0.90	E	18.7	0.69	B
		T	0.1	0.18	A	0.1	0.16	A	3.7	0.16	A
	NB	L	51.1	0.77	D	61.1	0.61	E	14.6	0.41	B
R		53.6	0.79	D	76.9	0.86	E	20.0	0.64	B	
Pi'ilani Highway and Pi'ikea Avenue	Signalized		20.4	-	C	23.0	-	C	13.3	-	B
	EB	L	72.0	0.89	E	80.4	0.91	F	30.2	0.81	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	73.1	0.85	E	83.5	0.90	F	38.2	0.81	D
		T	5.0	0.40	A	7.5	0.58	A	4.8	0.45	A
	SB	T	17.7	0.74	B	20.2	0.65	C	13.1	0.62	B
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	

Table 9 (Continued): Existing (2016) Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	17.7	0.14	C	18.6	0.24	C	12.6	0.14	B
	EB	L	500+	1.35	F	500+	1.61	F	201.5	0.67	F
		R	53.1	0.79	F	25.1	0.38	D	16.3	0.24	C
South Kihei Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	SB	L	8.6	0.01	A	9.1	0.03	A	8.9	0.03	A
	WB	L	20.4	0.22	C	32.2	0.27	D	30.7	0.32	D
		R	11.8	0.04	B	12.7	0.05	B	12.3	0.03	B
Pi'ilani Highway and Kulanihakoi Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	19.7	0.15	C	17.2	0.16	C	12.3	0.08	B
	EB	L	500+	4.21	F	500+	2.51	F	304.4	1.05	F
		R	37.6	0.57	E	24.3	0.36	C	15.5	0.18	C
Kenolio Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	9.5	0.01	A	0.0	0.00	A	10.2	0.01	B
		TR	8.8	0.03	A	9.3	0.02	A	9.3	0.02	A
	EB	L	7.4	0.02	A	7.7	0.03	A	7.5	0.03	A
	WB	L	7.3	0.01	A	7.3	0.01	A	7.4	0.01	A
	SB	L	10.9	0.22	B	11.6	0.13	B	11.1	0.14	B
		TR	8.8	0.01	A	9.2	0.02	A	9.1	0.02	A
Kaonoulu Street and Alulike Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	LTR	9.6	0.02	A	10.7	0.01	B	10.0	0.02	B
	EB	L	7.3	0.02	A	7.4	0.05	A	7.4	0.02	A
	WB	L	7.3	0.01	A	7.4	0.01	A	7.4	0.01	A
	SB	LTR	8.7	0.05	A	9.0	0.04	A	9.0	0.06	A

* Right turn channelization; Appr = Approach; Mvmt = Movement; v/c = volume to capacity ratio; NB = Northbound; EB = Eastbound; WB = Westbound; SB = Southbound; L = Left turn movement; R = Right turn movement; T = Through movement

D. Mitigation Measures for Existing Conditions

At the intersections of Pi'ilani Highway at Kaonoulu Street and Pi'ilani Highway at Kulanihako Street, the westbound left turn movements resulted in LOS F during all peak hours with the v/c ratio greater than 1.0 which suggests that capacity is exceeded. Mitigating measures were considered to address existing intersection conditions. Potential mitigation considered included the need for signalizing the intersections.

1. Signal Warrant Methodology

The *Manual on Uniform Traffic Control Devices (MUTCD)* (FHWA, 2009) states that prior to signalization of an intersection, an engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic signal is justified. It is noted that the satisfaction of a traffic signal warrant shall not in itself require the installation of a traffic control signal.

The *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)* (FHWA, 2009) lists nine warrants for consideration of providing a traffic signal at an intersection:

- Warrant 1: Eight-Hour Vehicular Volume – a combination of major and minor street minimum vehicular volumes reached for each of any eight hours of an average day;
- Warrant 2: Four-Hour Vehicular Volume - a combination of major and minor street minimum vehicular volumes reached for each of any four hours of an average day;
- Warrant 3: Peak Hour – where traffic conditions are such that for a minimum of one hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street;
- Warrant 4: Pedestrian Volume – where traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street;
- Warrant 5: School Crossing – where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal;
- Warrant 6: Coordinated Signal System – where progressive movement in a coordinated signal system necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles;
- Warrant 7: Crash Experience – for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal;
- Warrant 8: Roadway Network – to encourage concentration and organization of traffic flow on a roadway network;
- Warrant 9: Intersection Near a Grade Crossing – where none of the conditions described in the other eight traffic signal warrants are met but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

2. Existing Intersection Signal Warrant Analysis

With the traffic volumes collected, Warrant 1: Eight-Hour, Warrant 2: Four-Hour and Warrant 3: Peak Hour were run for the intersection of both intersection, utilizing the existing lane configurations. Both intersections were analyzed for the configuration with two lanes along the major roadway approach and two lanes along the minor roadway approach.

- For the intersection of Pi'ilani Highway and Kaonoulu Street, Warrant 1: Eight-Hour and Warrant 3: Peak Hour traffic signal warrants passed for existing conditions.
- For the intersection of Pi'ilani Highway and Kulanihakoi Street, Warrant 3: Peak Hour passed for existing conditions.

These results suggest that current intersection conditions may benefit from signalization. Traffic signal warrant analysis reports are shown in Appendix D.

III. FUTURE WITHOUT PROJECT CONDITIONS

Plans are to construct Pi'ilani Promenade in phases with approximately half of the project being completed by 2025 with full construction expected by 2032. Therefore, the Future conditions were evaluated for the years 2025 and 2032.

A. Future Roadway Construction

Planned roadway construction in the area includes the North-South Collector Road, between Kaonoulu Street and Waipuilani Road, as well as the mauka roadway, between Ohukai Road and Lipoa Street. These roads will add additional capacity and should help alleviate the vehicle demand on Pi'ilani Highway. However, without additional information on timing, these projects were not included in the future analysis.

B. Future Surrounding Area Development

Known developments in the surrounding area that were considered likely to be constructed by 2025 and 2032 are shown in Figure 7. The description of each development is explained in the following sections.

1. Kaiwahine Village

The proposed Kaiwahine Village is located at the east end of Kaiwahine Street. This affordable housing residential development will consist of 120 multi-family units. The traffic assignments for the subdivision were obtained from the *Traffic Impact Analysis Report for Kaiwahine Village* (PRA, 2010). This project is anticipated to be completed by 2025.

2. Maui Lu Resort

Maui Lu Resort currently exists in the northeast quadrant of the intersection of South Kihei Road at Kaonoulu Street. Plans are for the existing resort to be demolished and a 400-unit timeshare constructed in its place. It is also proposed that 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. Construction has started on the redevelopment of this resort with a proposed opening in 2017. The proposed signalization had not been completed at the time of this report. The traffic assignments for the project were obtained from *TIAR for Maui Lu Resort* (PRA, 2004).

The intersection of South Kihei Road at Kaonoulu Street will be 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.

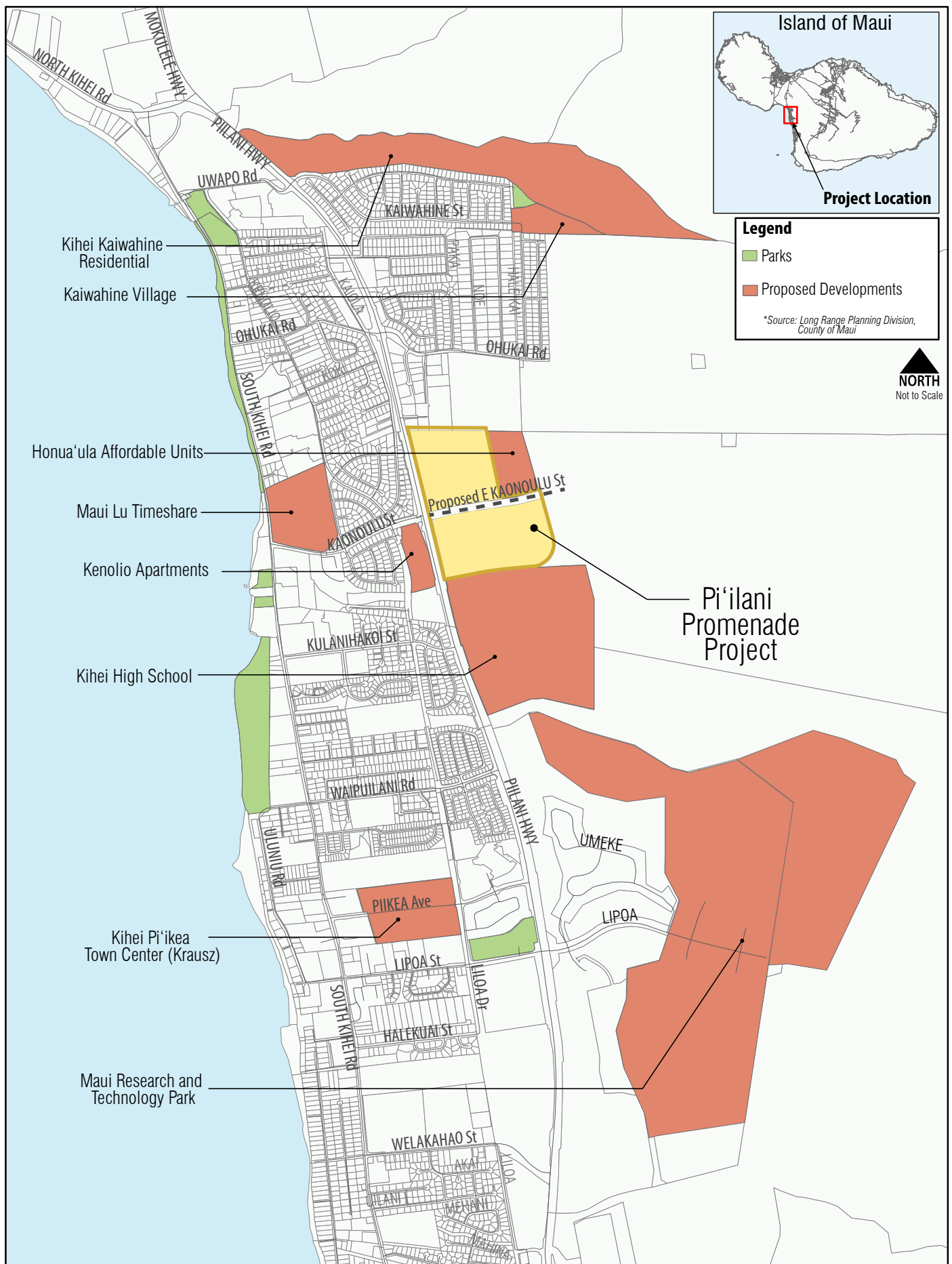


Figure 7: Surrounding Area Developments

Pi'ilani Promenade – Kihei, Maui

3. Kihei High School

The proposed Kihei High School will be located along the east side of Pi'ilani Highway, south of the proposed Pi'ilani Promenade development. According to the *Traffic Impact Report for Kihei High School* (WOC, 2012), the school will have a capacity of approximately 1,650 students serving grades 9 through 12. The development of the school will be in two phases with 800 students in Phase 1 and 850 students in Phase 2. Both phases are expected to be completed by 2025.

Access and egress will be via the intersection of Pi'ilani Highway at Kulanihakoi Street, which will be modified with an extension of Kulanihakoi Street across Pi'ilani Highway. The intersection of Pi'ilani Highway at Kulanihakoi Street will be signalized to accommodate the trips generated proposed high school.

The number of trips that the high school will generate during weekday peak hours was obtained from the *Traffic Impact Report for Kihei High School* (WOC, 2012) for the project. Based on the trip generation data, the number of trips generated on a Saturday will be negligible.

The intersection of Pi'ilani Highway at Kulanihakoi Street will be signalized. The northbound approach will be modified to provide a dedicated right turn lane, the southbound approach will be modified to provide a left turn lane and the eastbound and westbound approached will be modified to provide a shared through/left turn lane and a dedicated right turn lane. These improvements are those recommended in the TIAR to accommodate the traffic from the proposed Kihei High School.

4. Kenolio Apartments

The Kenolio Apartments is located between Pi'ilani Highway and Kenolio Road in the southwest quadrant of the intersection of Kaonoulu Street at Pi'ilani Highway. The project is a 186 unit multi-family affordable housing development. It is anticipated that the project will be completed in 2017. Access to and egress from will be via two driveways along the east side of Kenolio Road. The traffic assignments for the project were obtained from the *TIAR for Kenolio Apartments, An Affordable Housing Project* (PRA, 2014).

5. Kihei Residential

The proposed Kihei Residential development is located on the east side of Pi'ilani Highway, north of Kaiwahine Street. The project includes 400 single-family units, 200 multi-family units, 3,000 square feet of commercial area, 7,000 square feet of offices, and a 10 acre park. Groundbreaking occurred in mid-January 2016. It is anticipated that 25% of the project will be completed by 2025 and full build out will be by 2032. Access to and egress from will be via a driveway along Kaiwahine Street and a driveway along Pi'ilani Highway. The traffic assignments for the project were obtained from the *TIAR Kihei Residential Project* (ATA, 2007).

It was recommended to modify the southbound approach on Pi'ilani Highway to provide an additional left-turn lane. It was also recommended that the westbound approach on Kaiwahine Street have an additional left-turn lane and the eastbound approach on Uwapo Road has a left turn lane, a through lane and a right turn lane. These modifications were included in the future analyses.

6. Krausz Companies Commercial Mixed-Use Development (Downtown Kihei)

The proposed Krausz Companies commercial mixed-use development (referred as Downtown Kihei) is located along Pi'ikea Avenue between Liloa Drive and South Kihei Road. The project includes 249,450 square feet of retail space, approximately 18,500 square feet of office space, and a 150-room hotel. The traffic assignment for the project were obtained from the *TIAR Krausz Companies Commercial Mixed-Use Development (Downtown Kihei)* (ATA, 2012). Proposed completion is expected by 2025.

It was recommended to install an additional left-turn lane on the eastbound approach of Pi'ikea Avenue at the intersection of Pi'ilani Highway. It was also recommended to monitor the northbound left-turn movement along Pi'ilani Highway at this intersection in case an additional left-turn lane is needed. However, the status of the construction of the additional turn lane is unknown at this time and will not be included in the future analyses.

7. Honua'ula Affordable Housing

The proposed Honua'ula Affordable Housing is located north of Pi'ilani Promenade. This development will include 125 units of affordable apartments and 125 owner-occupied units, meeting the requirements of the County Work Force Housing Ordinance. Access to this development will be through East Kaonoulu Street. If construction of the Honua'ula Affordable Housing commences prior to the construction of East Kaonoulu Street extension, temporary construction access to this development will be through a driveway off of Ohukai Road. Once the East Kaonoulu Street extension is open, the temporary access will be closed and all trips generated by this trip will use East Kaonoulu Street. This development is anticipated to be completed by 2025.

8. Maui Research and Technology Park

The Maui Research and Technology Park (MRTP) is located south of Kihei High School on the mauka side of Pi'ilani Highway. Primary access to MRTP will be through the intersection of Pi'ilani Highway and Lipoa Parkway. According to the *Traffic Impact Analysis for Maui Research and Technology Park* (PB, 2013), the proposed development will be implemented in two phases. Phase 1 will consists of 723,200 square feet (sf) of employment, 100,000 sf of retail, 750 residential dwelling units, 150 hotel rooms and 102,000 sf of an elementary school. Phase 2 will consist of over one-million sf of employment, and 500 residential dwelling units. Phase 1 of the MRTP is projected to be completed by 2024. Phase 2 is projected to be completed by 2034. Traffic associated with the MRTP would be accounted for in the background growth as the primary access to the MRTP is located outside the study area (south of the intersection of Pi'ilani Highway and Pi'ikea Avenue).

9. Other Developments

There were several additional developments identified within Kihei, Wailea and Mākena. However, upon research, the status of these developments was in flux. It was therefore assumed that the increase in traffic associated with these developments would be accounted for in the

background growth. Appendix E includes a County of Maui map showing all known developments within the area.

C. Future Geometric Configuration

Changes in roadway configuration are expected as described above and are anticipated to be completed by 2025. In addition to the changes in roadway configuration due to surrounding area developments, the intersection of Pi'ilani Highway and Kaonoulu Street passed signal warrants and therefore was analyzed as a signalized intersection. Lane configuration for Future Without Project are shown in Figure 8.

D. Future Traffic Volumes

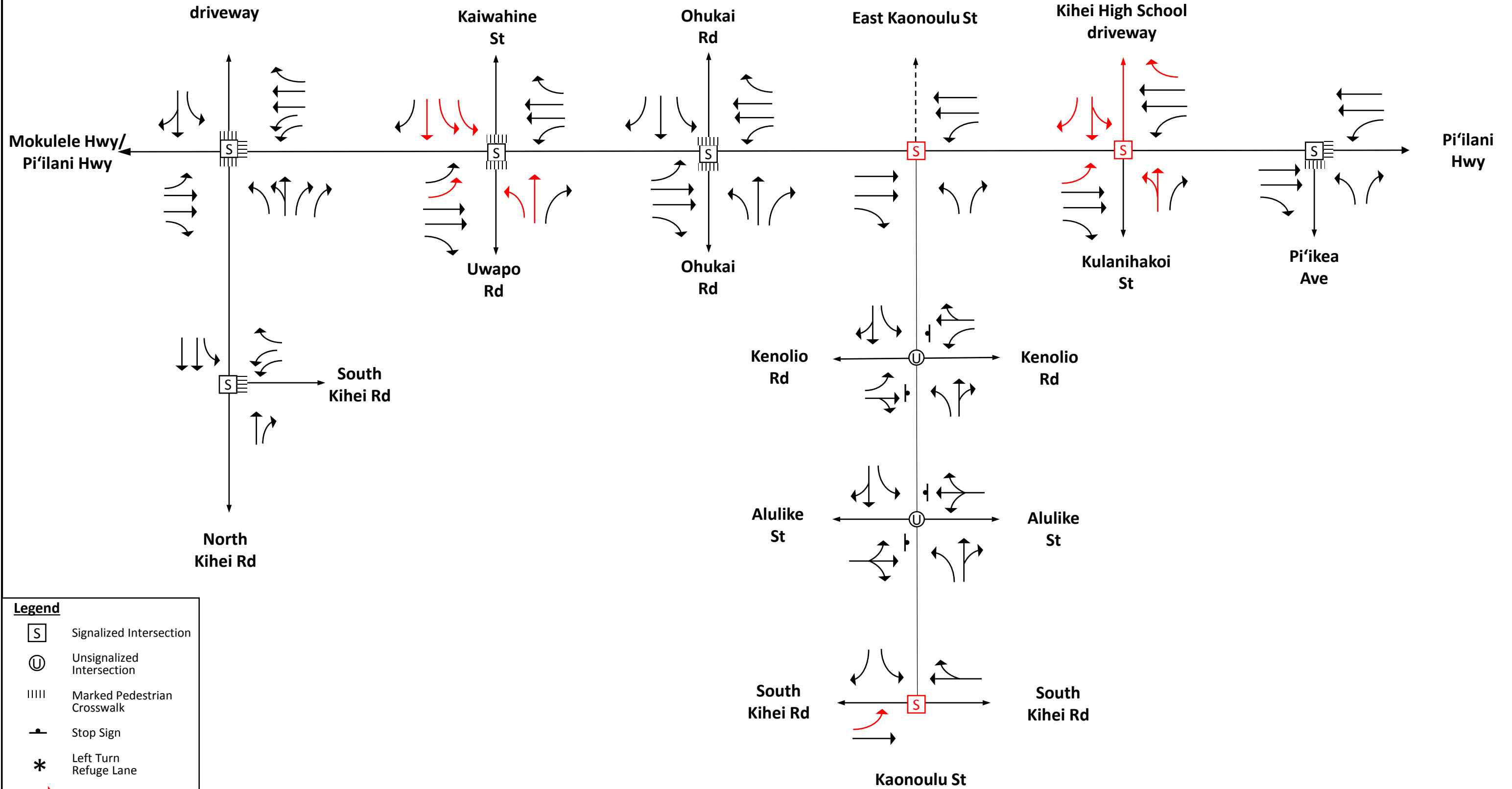
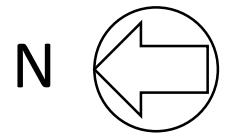
Future traffic volumes were projected by applying an ambient background growth in addition to trip volumes related to specific development. Ambient background growth is associated with regional growth not attributed to a specific project. This growth also considers traffic associated with minor, or small, 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.

1. Background Growth

According to the *Maui Long Range Land Transportation Plan* model (CH2M Hill/HDOT, 2013), traffic volumes along Pi'ilani Highway are projected to increase an average of 1.25% per year from 2007 to 2020 and 1.24% per year from 2020 to 2035. The annual compounded growth rate along South Kihei Road was 3.60% from 2007 to 2020 and 2.05% from 2020 to 2035. These growth rates were used to calculate the projected background growth from 2016 to 2025 and from 2025 to 2032.

The respective growth factors were applied to the northbound and southbound through traffic movements along Pi'ilani Highway and South Kihei Road at the study intersections. Intersection turning movement traffic volumes are considered a reflection of individual project trips and not regional growth, and therefore no ambient growth rate was applied.

PROPOSED PROJECT SITE



Legend

- S Signalized Intersection
- U Unsignalized Intersection
- ||||| Marked Pedestrian Crosswalk
- | Stop Sign
- * Left Turn Refuge Lane
- Lane Configuration Modification

Figure 8: Future Without Project Lane Configuration

Pi'ilani Promenade - Kihei, Maui

2. Other Project Related Volumes

The addition of trips resulting from the surrounding area projects are shown in Table 10. This data was taken from the respective traffic impact analysis reports or calculated.

Table 10: Other Project Related Trips

Project Name	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Kaiwahine Village	10	50	60	47	23	70	42	35	77
Maui Lu Resort	213	103	316	157	206	363	157	206	363
Kihei High School Phase 1	228	108	336	49	55	104	0	0	0
Kihei High School Phase 2	243	114	357	52	59	111	0	0	0
Kenolio Apartments	19	76	95	78	42	120	47	48	95
Kihei Residential	213	403	616	405	332	737	330	311	641
Krauz Development	143	78	21	249	270	519	338	305	643
	87	55	142	259	270	529	361	333	694
Honua'ula Affordable Housing	24	103	127	104	54	158	78	71	149

Note is made about Honua'ula Affordable Housing Project because of its proximity to Pi'ilani Promenade. These are two separate projects under two different ownerships. However, the two projects will undergo entitlement reviews and if approved construction, in fairly close proximity, so explanation is offered. While it is possible that the Honua'ula Affordable Housing Project would proceed without Pi'ilani Promenade if the latter fails to gain entitlements, this is not considered a likely scenario.

This TIAR treats Honua'ula Affordable Housing Project in the following way:

- Trip generation rates were calculated using trip generation equations for Apartment (125 units) and Residential Condominium/Townhouse (125 units) from the *Trip Generation, 8th Edition* (ITE, 2008). The results in Table 10 show that during the AM peak hour, 103 outbound trips are generated and 24 inbound for a total of 127 trips. The PM peak hour has slightly more traffic generated, 104 in and 54 out movements for a total of 158 trips. Saturday peak hour has 78 in movements and 71 out for a total of 149 trips.
- Access for the Honua'ula Affordable Housing project is through a new mauka leg East Kaonoulu Street and assigned to that roadway. This roadway extension will be completed as part of Pi'ilani Promenade. The traffic analysis for **With Project** includes both projects using East Kaonoulu Street. See Figures 14 to 16 for project related trips

associated with Pi'ilani Promenade and see Figure 17 for project related trips associated with Honua'ula Affordable Housing Project.

- In order to isolate the effects of Pi'ilani Promenade, Honua'ula Affordable Housing Project is treated as part of background traffic in the **Without Project**. Because East Kaonoulu Street is not assumed to be completed under this condition, traffic associated with Honua'ula Affordable Housing Project is assigned to use a possible temporary driveway access off of Ohukai Road. Ohukai Road temporary access is subsequently closed when East Kaonoulu Street is constructed and opened. See Figures 18 to 20.

3. Future Without Project Volumes

Future Without Project volumes for the AM, PM and Saturday Peak Hour Volumes are shown in Figures 9 through 11 respectively.

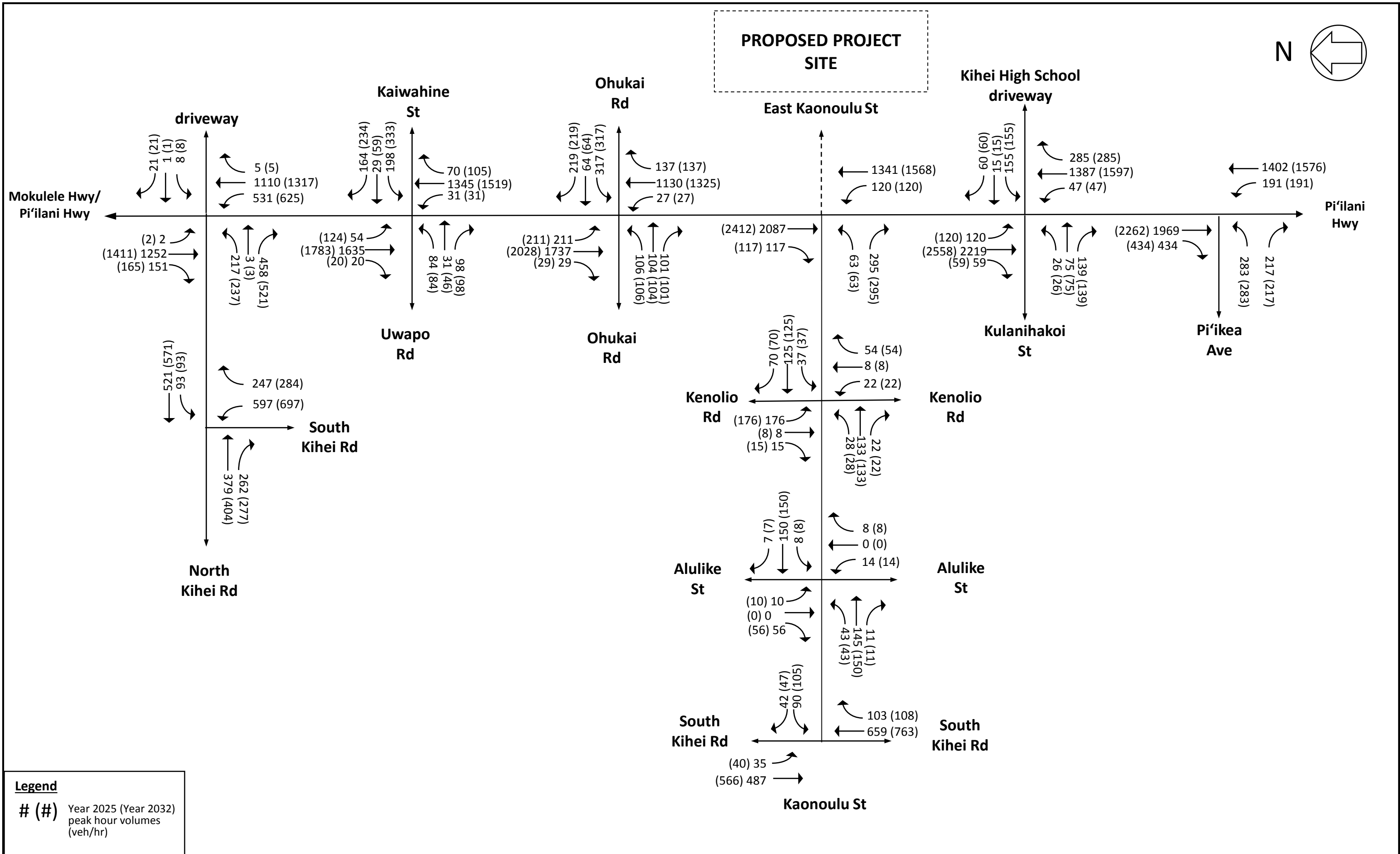


Figure 9: Future (2025 and 2032) Without Project AM Peak Hour Volumes
 Pi'ilani Promenade - Kihei, Maui

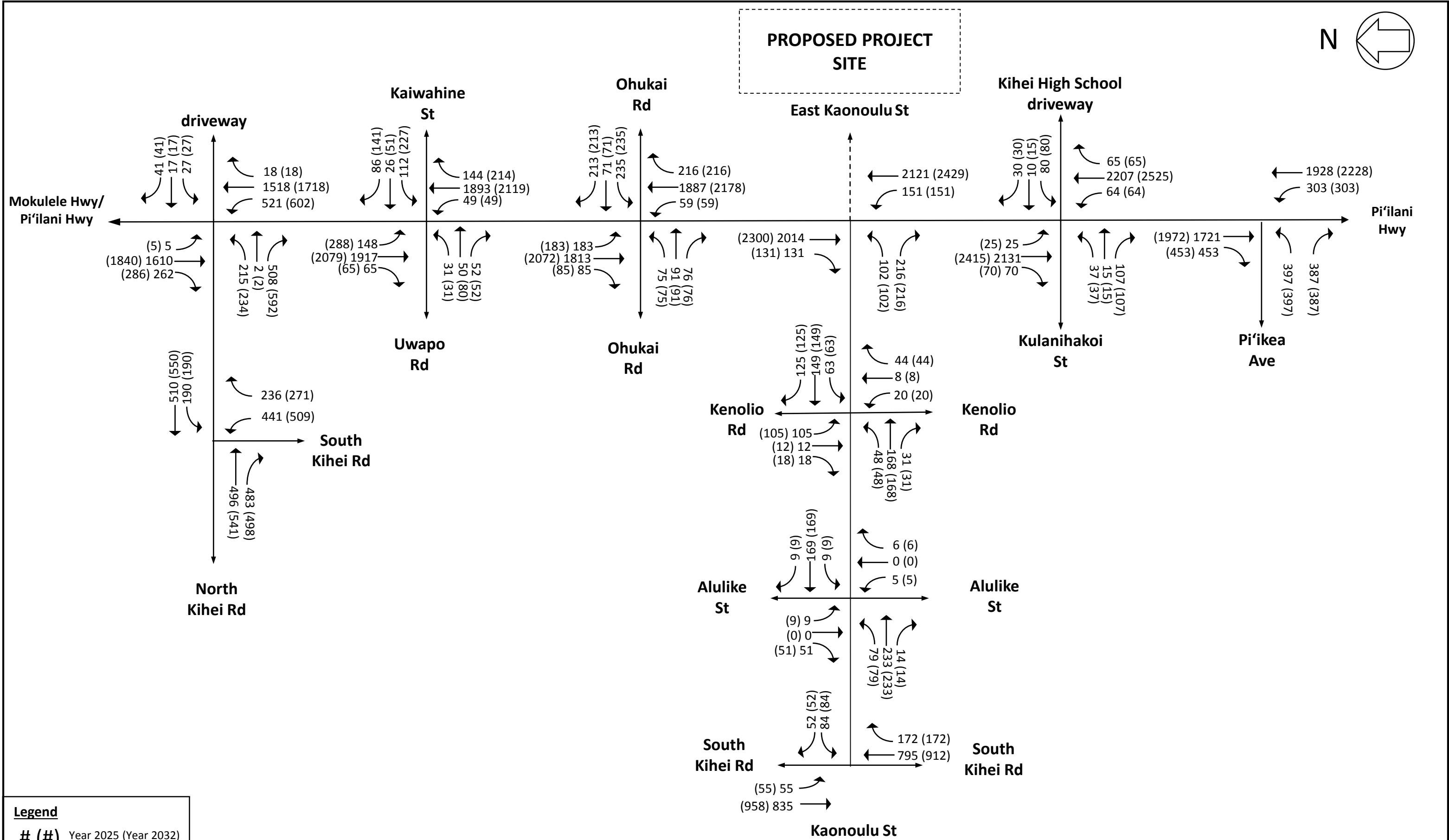
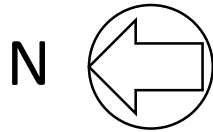


Figure 10: Future (2025 and 2032) Without Project PM Peak Hour Volumes

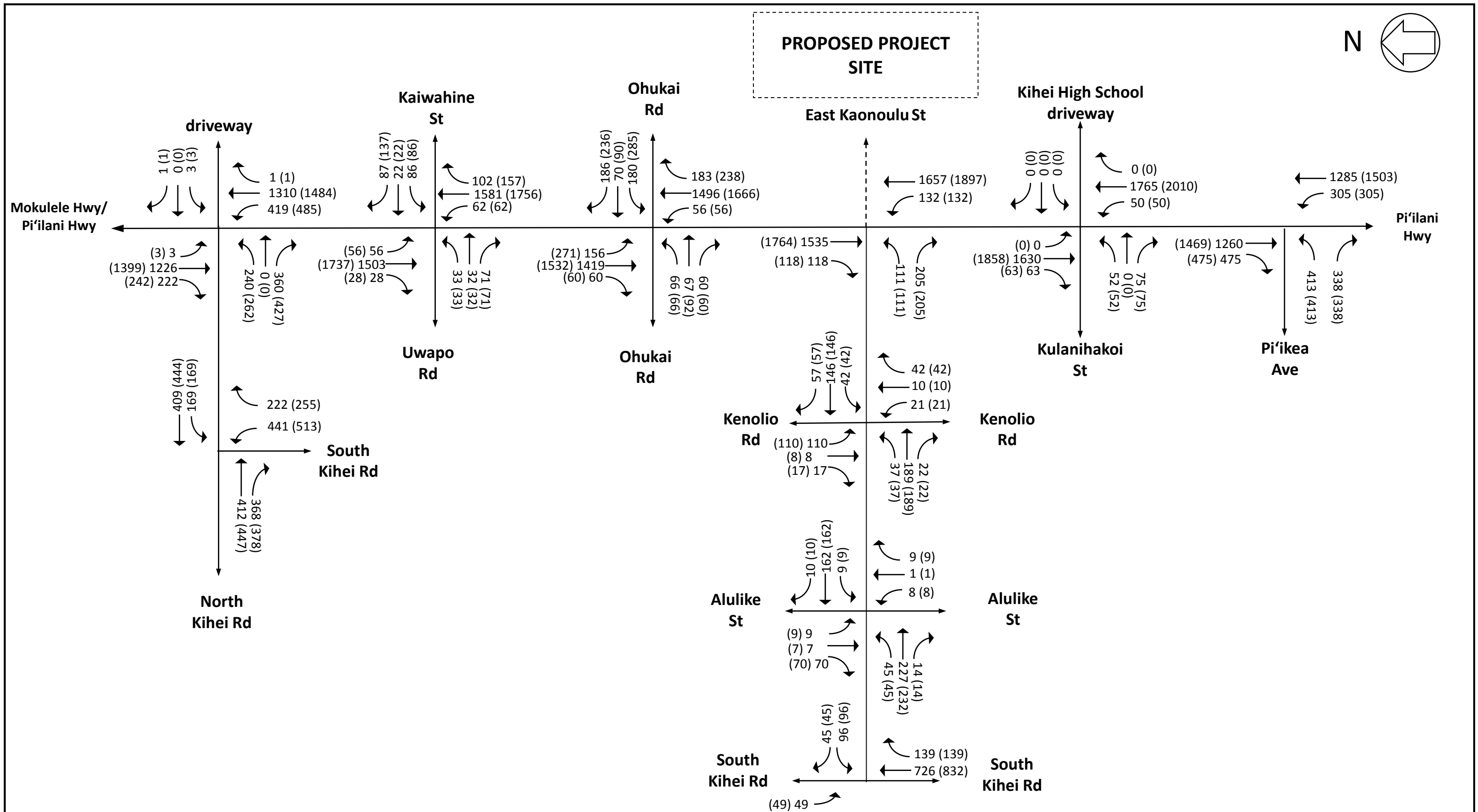
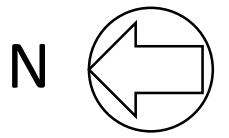


Figure 11: Future (2025 and 2032) Without Project Saturday Peak Hour Volumes

E. Future Without Project Intersection Level of Service

1. Future (2025) Without Project LOS

Future (2025) Without Project intersection LOS, v/c ratio and delay were determined for the AM, PM and Saturday peak hours (see Table 11). For Future (2025) Without Project conditions, all signalized intersection LOS maintained LOS D or better results. Individual turning movement LOS and v/c remained poor for some signalized intersections. All unsignalized intersections resulted in LOS C or better. Detailed analysis reports for these intersections are provided in Appendix F.

Table 11: Future (2025) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Ohukai Road	Signalized		48.9	-	D	48.4	-	D	33.2	-	C
	EB	L	75.4	0.77	E	89.7	0.73	F	68.8	0.68	E
		T	63.2	0.54	E	76.0	0.54	E	53.5	0.30	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	141.6	1.10	F	133.8	1.01	F	74.3	0.83	E
		T	48.4	0.18	D	61.3	0.23	E	45.1	0.20	D
	NB	L	66.5	0.30	E	80.4	0.56	F	59.2	0.44	E
		T	33.8	0.72	C	45.5	0.95	D	29.7	0.83	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	75.1	0.87	E	123.4	1.01	F	72.3	0.81	E
		T	35.9	0.93	D	28.1	0.85	C	23.0	0.73	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
Pi'ilani Highway and Uwapo Road/ Kaiwahine Street	Signalized		34.7	-	C	20.4	-	C	14.2	-	B
	EB	L	150.4	0.98	F	44.4	0.48	D	72.0	0.60	E
		T	67.1	0.40	E	39.9	0.41	D	64.9	0.40	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	193.1	1.19	F	40.8	0.55	D	63.6	0.55	E
		T	66.6	0.37	E	35.2	0.16	D	59.6	0.20	E
	NB	L	40.8	0.08	D	37.3	0.40	D	56.9	0.41	E
		T	7.5	0.54	A	17.9	0.88	B	8.4	0.61	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	63.7	0.42	E	40.4	0.61	D	61.6	0.40	E
		T	29.6	0.88	C	18.5	0.89	B	11.0	0.61	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
Pi'ilani Highway and North Kihei Road	Signalized		23.9	-	C	32.3	-	C	19.4	-	B
	EB	LT	35.9	0.59	D	45.5	0.61	D	47.0	0.63	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	36.1	0.09	D	46.3	0.23	D	51.8	0.07	D
		TR	38.5	0.26	D	52.2	0.54	D	52.3	0.03	D
	NB	L	42.8	0.88	D	55.6	0.89	E	47.4	0.80	D
		T	9.1	0.54	A	11.4	0.68	B	7.6	0.54	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	74.6	0.52	E	68.3	0.54	E	79.0	0.53	E
		T	26.4	0.86	C	41.7	0.98	D	16.9	0.64	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*

Table 11 (Continued): Future (2025) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
South Kihei Road and North Kihei Road	Signalized		18.3	-	B	18.0	-	B	15.2	-	B
	EB	T	11.7	0.44	B	14.3	0.65	B	13.0	0.58	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	28.6	0.63	C	29.2	0.76	C	22.2	0.72	C
		T	4.8	0.24	A	4.1	0.23	A	4.1	0.20	A
	NB	L	26.3	0.79	C	20.6	0.64	C	17.9	0.61	B
R		33.8	0.79	C	41.9	0.86	D	29.1	0.79	C	
Pi'ilani Highway and Pi'ikea Avenue	Signalized		36.7	-	D	41.1	-	D	35.0	-	D
	EB	L	75.2	0.95	E	84.8	1.02	F	74.1	0.93	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	112.3	1.03	F	99.2	1.03	F	80.4	0.92	F
		T	6.5	0.57	A	12.5	0.80	B	11.8	0.54	B
	SB	T	45.4	1.02	F	52.8	1.03	F	34.9	0.77	C
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and Kaonoulu Street	Signalized		11.3	-	B	17.9	-	B	12.6	-	B
	EB	L	55.3	0.76	E	94.3	0.84	F	74.7	0.82	E
		L	92.5	0.91	F	65.9	0.52	E	55.2	0.49	E
	NB	T	1.9	0.46	A	4.6	0.71	A	3.2	0.56	A
		T	11.4	0.84	B	24.6	0.86	C	14.5	0.66	B
	SB	R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
South Kihei Road and Kaonoulu Street	Signalized		9.3	-	A	9.2	-	A	10.2	-	B
	WB	L	31.4	0.65	C	27.6	0.61	C	24.5	0.63	C
		R	24.7	0.34	C	25.4	0.42	C	21.3	0.33	C
	NB	T	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
		R	8.3	0.67	A	10.4	0.83	B	12.6	0.85	B
	SB	L	42.6	0.68	D	38.3	0.74	D	33.6	0.70	C
T		2.7	0.36	A	3.0	0.59	A	3.2	0.58	A	
Pi'ilani Highway and Kulanihakoi Street	Signalized		24.7	-	C	24.6	-	C	6.0	-	A
	EB	LT	45.2	0.33	D	75.7	0.32	E	64.6	0.45	E
		R	0.0	0.00	*				0.0	0.00	*
	WB	LT	52.9	0.68	D	81.1	0.62	F	59.7	0.05	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	118.0	0.83	F	98.0	0.80	F	79.4	0.77	E
		T	14.0	0.64	B	32.1	0.93	C	2.9	0.60	A
	SB	L	67.4	0.83	E	59.5	0.09	E	0.0	0.00	*
T		23.9	0.94	C	10.3	0.76	B	5.1	0.59	A	
Kenolio Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	13.0	0.05	B	17.6	0.07	C	15.7	0.07	C
		TR	9.9	0.08	A	11.0	0.09	B	11.0	0.09	B
	EB	L	7.7	0.02	A	8.0	0.04	A	7.8	0.03	A
	WB	L	7.6	0.03	A	7.8	0.05	A	7.8	0.04	A
	SB	L	19.3	0.43	C	24.9	0.39	C	22.0	0.38	C
TR		10.5	0.04	B	12.6	0.07	B	11.3	0.05	B	

Table 11 (Continued): Future (2025) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Kaonoulu Street and Alulike Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	LTR	11.9	0.05	B	12.9	0.03	B	12.6	0.04	B
	EB	L	7.7	0.03	A	7.8	0.06	A	7.7	0.04	A
	WB	L	7.6	0.01	A	7.8	0.01	A	7.8	0.01	A
	SB	LTR	10.1	0.09	B	10.7	0.10	B	10.8	0.13	B

* Right turn channelization; Appr = Approach; Mvmt = Movement; v/c = volume to capacity ratio;

NB = Northbound; EB = Eastbound; WB = Westbound; SB = Southbound;

L = Left turn movement; R = Right turn movement; T = Through movement

2. Future (2032) Without Project LOS

Future (2032) Without Project intersection LOS, v/c ratio and delay were determined for the AM, PM and Saturday peak hours (see Table 12). For Future (2032) Without Project conditions, all signalized intersection LOS maintained LOS D or better results except for the intersection of Pi'ilani Highway at Ohukai Road which resulted in LOS E during the AM and Weekend peak hours. Individual turning movement LOS and v/c remained poor for some signalized intersections. All unsignalized intersections resulted in LOS C or better. Detailed analysis reports for these intersections are provided in Appendix F.

Table 12: Future (2032) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Ohukai Road	Signalized		61.3	-	E	52.7	-	D	60.0	-	E
	EB	L	79.1	0.77	E	147.6	0.80	F	71.6	0.69	E
		T	66.1	0.56	E	142.9	0.81	F	57.7	0.44	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	222.3	1.30	F	181.7	1.02	F	135.9	1.08	F
		T	53.9	0.21	D	104.2	0.28	F	44.8	0.23	D
	NB	L	69.0	0.31	E	155.7	0.77	F	61.9	0.45	E
		T	32.9	0.78	C	61.7	0.98	E	64.0	1.02	F
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	89.3	0.95	F	170.1	1.03	F	136.5	1.08	F
		T	50.9	1.03	F	6.2	0.86	A	28.4	0.81	C
	R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	

Table 12 (Continued): Future (2032) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Uwapo Road/ Kaiwahine Street	Signalized		21.4	-	C	19.9	-	B	18.0	-	B
	EB	L	77.2	0.74	E	145.6	0.67	F	36.9	0.46	D
		T	76.5	0.54	E	144.8	0.80	F	31.8	0.24	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	107.0	0.98	F	143.4	0.86	F	32.8	0.42	C
		T	66.9	0.39	E	111.6	0.26	F	29.5	0.13	C
	NB	L	36.9	0.09	D	103.1	0.31	F	33.5	0.57	C
		T	0.9	0.67	A	0.8	0.86	A	16.9	0.86	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	66.6	0.67	E	118.0	0.90	F	31.4	0.27	C
T		14.0	0.99	B	1.5	0.84	A	16.5	0.85	B	
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and North Kihei Road	Signalized		26.4	-	C	44.0	-	D	22.5	-	C
	EB	LT	69.5	0.72	E	130.2	0.81	F	33.6	0.63	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	70.6	0.13	E	151.2	0.61	F	34.9	0.05	C
		TR	75.5	0.39	E	415.8	1.42	F	35.6	0.02	D
	NB	L	52.7	0.92	D	93.1	0.95	F	29.7	0.75	C
		T	0.5	0.53	A	0.4	0.62	A	10.3	0.70	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	111.3	0.53	F	158.2	0.61	F	61.4	0.52	E
		T	30.6	0.79	C	44.1	0.86	D	30.7	0.94	C
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
South Kihei Road and North Kihei Road	Signalized		22.6	-	C	32.9	-	C	17.1	-	B
	EB	T	14.2	0.46	B	18.8	0.52	B	14.3	0.63	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	36.8	0.67	D	57.9	0.89	E	25.1	0.73	C
		T	15.5	0.27	B	0.1	0.22	A	4.6	0.21	A
	NB	L	28.1	0.79	C	52.3	0.73	D	19.4	0.67	B
R		30.3	0.75	C	73.4	0.90	E	33.8	0.83	C	
Pi'ilani Highway and Pi'ikea Avenue	Signalized		49.6	-	D	51.7	-	D	34.6	-	C
	EB	L	121.5	1.05	F	119.0	1.08	F	86.7	1.05	F
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	140.7	1.06	F	130.2	1.09	F	85.3	1.01	F
		T	7.2	0.61	A	17.1	0.88	B	8.8	0.65	A
	SB	T	62.4	1.06	F	65.1	1.06	F	35.9	0.96	D
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and Kaonoulu Street	Signalized		15.2	-	B	25.6	-	C	14.7	-	B
	EB	L	84.9	0.78	F	155.0	0.89	F	64.7	0.81	E
		L	138.3	0.97	F	111.4	0.60	F	42.8	0.39	D
	NB	T	2.0	0.52	A	6.5	0.79	A	4.0	0.65	A
		T	15.8	0.90	B	34.4	0.91	C	21.0	0.82	C
	R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	

Table 12 (Continued): Future (2032) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
South Kihei Road and Kaonoulu Street	Signalized		11.2	-	B	10.3	-	B	12.3	-	B
	WB	L	30.6	0.67	C	35.0	0.64	C	28.3	0.65	C
		R	26.5	0.34	C	32.2	0.44	C	24.7	0.34	C
	NB	T	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
		R	11.7	0.78	B	11.5	0.86	B	16.2	0.89	B
	SB	L	42.7	0.71	D	53.1	0.80	D	39.6	0.74	D
		T	3.3	0.43	A	3.2	0.65	A	3.8	0.64	A
Pi'ilani Highway and Kulanihakoii Street	Signalized		49.4	-	D	33.0	-	C	6.6	-	A
	EB	L	56.5	0.34	E	119.4	0.35	F	58.6	0.42	E
		TR	0.0	0.00	*				0.0	0.00	*
	WB	L	72.6	0.74	E	130.7	0.73	F	54.3	0.11	D
		TR	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	215.1	1.04	F	161.7	0.84	F	74.0	0.77	E
		T	41.6	0.91	D	40.0	0.96	D	3.5	0.68	A
	SB	L	47.3	0.31	D	106.7	0.13	F	0.0	0.00	*
		T	49.5	1.04	F	15.6	0.84	B	6.4	0.69	A
	Kenolio Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-
NB		L	13.0	0.05	B	17.6	0.07	C	15.7	0.07	C
		TR	9.9	0.08	A	11.0	0.09	B	11.0	0.09	B
EB		L	7.7	0.02	A	8.0	0.04	A	7.8	0.03	A
WB		L	7.6	0.03	A	7.8	0.52	A	7.8	0.04	A
		L	19.3	0.43	C	24.9	0.39	C	22.0	0.38	C
		TR	10.5	0.04	B	12.6	0.07	B	11.3	0.05	B
Kaonoulu Street and Alulike Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	LTR	12.0	0.05	B	12.9	0.03	B	12.7	0.04	B
		L	7.7	0.03	A	7.8	0.06	A	7.7	0.04	A
	WB	L	7.6	0.01	A	7.8	0.01	A	7.8	0.01	A
	SB	LTR	10.1	0.09	B	10.7	0.10	B	10.8	0.13	B

* Right turn channelization; Appr = Approach; Mvmt = Movement; v/c = volume to capacity ratio;

NB = Northbound; EB = Eastbound; WB = Westbound; SB = Southbound;

L = Left turn movement; R = Right turn movement; T = Through movement

F. Future Without Project Mitigation Measures

1. Future (2025) Without Project Mitigation

With all signalized intersections maintaining LOS D or better results and unsignalized intersection turning movements resulting in LOS C or better, no mitigation measures are deemed necessary.

2. Future (2032) Without Project Mitigation

a) Pi'ilani Highway and Ohukai Road

The intersection of Pi'ilani Highway and Ohukai Road resulted in poor LOS for Future (2032) Without Project conditions. Possible mitigation measures include signal optimization or the construction of additional turning lanes.

IV. FUTURE WITH PROJECT CONDITIONS

A. Future With Project Geometric Configuration

A portion of East Kaonoulu Street is being constructed with the development of Pi'ilani Promenade by 2025. This will add a mauka leg to the intersection of Pi'ilani Highway and Kaonoulu Street. Additional intersection modifications include:

- Southbound approach will have double left turn lanes, two through lanes, and a channelized right turn lane.
- Northbound approach will have a dedicated left turn lane, two through lanes, and a channelized right turn lane.
- Eastbound approach will have a left turn lane, a through lane, and a channelized right turn lane.
- Westbound approach will have dual left turn lanes, a through lane and channelized right turn lane with an acceleration lane.

The lane configuration for Future With Project conditions are shown in Figure 12.

The Pi'ilani Promenade project also includes the construction of a shared-use pedestrian and bike path along the mauka-side of Pi'ilani Highway, adjacent to the proposed development and within the project site, in addition to the bike lanes on Pi'ilani Highway. A pedestrian plan created for the project is included in Appendix G.

B. Future With Project Traffic Volumes

1. Project Related Volumes

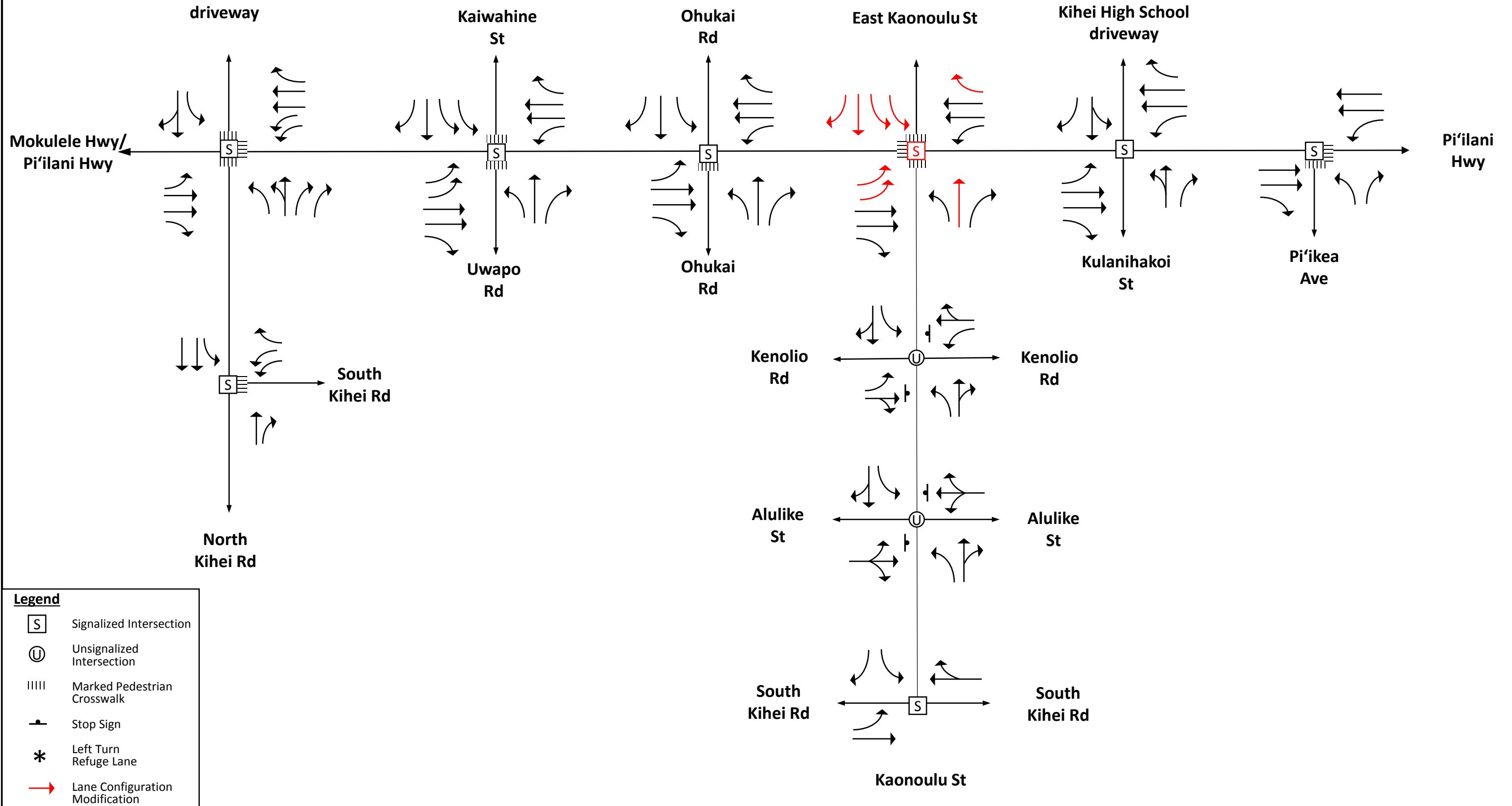
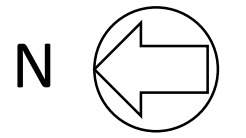
The addition of trips resulting from the project was calculated using the four-step trip generation methodology: trip generation, trip distribution, modal choice, route assignment.

a) Trip Generation

(1) Trip Generation Methodology

The proposed mixed-use development is planning to include commercial, light industrial and affordable apartment units. Resulting trip generation for the proposed development was calculated using *Trip Generation, 8th Edition* (ITE, 2008) and related trip generation rates are shown in Table 13.

PROPOSED PROJECT SITE



Legend

- S Signalized Intersection
- U Unsignalized Intersection
- ||||| Marked Pedestrian Crosswalk
- ┐ Stop Sign
- * Left Turn Refuge Lane
- Lane Configuration Modification

Figure 12: Future With Project Lane Configuration

Pi'ilani Promenade - Kihei, Maui

Table 13: Development Trip Generation Rates

Land Use [ITE Code]	Quantity	Trip Generation Equation		
		AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Commercial [820]	530,000 sq. ft.	$\text{Ln}(T) = 0.59\text{Ln}(X)+2.32$	$\text{Ln}(T) = 0.67\text{Ln}(X)+3.37$	$\text{Ln}(T) = 0.65\text{Ln}(X)+3.76$
Light Industrial [110]	5 acres	$T=7.51(X)$	$T=3.68(X)+116.82$	$T=0.96(X)$
Apartment [220]	226 units	$T=0.49(X)+3.73$	$T=0.55(X)+17.65$	$T=0.41(X)+19.23$

Methodologies described in *Trip Generation Handbook, 2nd Edition* (ITE, June 2004) state that although total project trips are calculated for a specified development, the total trips will not necessarily be new vehicles added to the adjacent roadways. The three types of project related trips considered are pass-by trips, diverted trips, and primary trips. The definition of each type of trip is shown in Table 14.

Table 14: Project Related Trip Definitions

Type	Definition
Pass-by	Traffic currently passing the site on an adjacent street or roadway that offers direct access to the generator.
Diverted	Trips that are attracted from the traffic volume on roadways within the vicinity of the generator but require a diversion from that roadway to another roadway to gain access to the site.
Primary	Trips made for the specific purpose of visiting the generator. The stop at the generator is the primary reason for the trip.

Source: *Trip Generation Handbook, 2nd Edition* (ITE, June 2004)

(2) Trip Generation Calculation

It is anticipated that by 2025 all the apartments will be fully occupied and 50% of the commercial and industrial areas will be completed. The remaining development will be constructed by 2032. Resulting project related trips for year 2025, 2032, and the total are shown in Table 15.

Table 15: Phased Project Related Trip Generation Volumes

Land Use [ITE Code]	Years	Project Related Trips								
		AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Commercial [820]	2025	126	81	207	540	562	1,102	659	608	1,267
	2032	125	80	205	540	563	1,103	659	608	1,267
	Total	251	161	412	1,080	1,125	2,205	1,318	1,216	2,534
Light Industrial [110]	2025	16	3	19	16	53	69	1	2	3
	2032	16	3	19	14	52	67	1	1	2
	Total	32	6	38	30	105	135	2	3	5
Apartment [220]	2025	23	91	114	92	50	142	56	56	112
	2032	0	0	0	0	0	0	0	0	0
	Total	23	91	114	92	50	142	56	56	112
Total Project	2025	165	175	340	648	665	1,313	716	665	1,382
	2032	141	84	225	554	615	1,170	660	609	1,270
	Total	306	258	564	1,202	1,280	2,482	1,376	1,275	2,651

The percentage of pass-by trips generated by the commercial use was estimated using the data provided in the *Trip Generation Handbook, 2nd Edition*. The pass-by trip reduction rates used for the AM, PM and Saturday peak hours is 10%, 24% and 39%, respectively. No pass-by reduction factors were applied to the industrial or apartment trips generated. No diverted trips were accounted for in the analysis. Table 16 provides a breakdown of the primary and pass-by trips generated, including 2025, 2032, and then the total project.

Table 16: Project Related Trip Generation Breakdown

Trip Type	Years	Project Related Trips								
		AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Primary	2025	152	167	319	518	530	1,047	459	428	888
	2032	129	76	205	425	480	906	403	372	776
	Total	281	243	524	943	1,010	1,953	862	800	1,664
Pass-By	2025	13	8	21	130	135	265	257	237	494
	2032	12	8	20	129	135	264	257	237	494
	Total	25	16	41	259	270	259	514	474	988
Total Trips	2025	165	175	340	648	665	1,312	716	665	1,382
	2032	141	84	225	554	615	1,170	660	609	1,270
	Total	306	258	564	1,202	1,280	2,482	1,376	1,275	2,651

b) Trip Distribution

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 tourists 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 generated 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 Pi'ilani Highway and then Pi'ilani 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, Honua'ula, Mākena Resort and additional Wailea Resort units. Using this distribution, 20% of the trips associated from within Kihei would be generated by the area north of Kaonoulu Street and 80% would be generated by the area south of Kaonoulu Street.

Trip distribution is shown in Figure 13.

c) Modal Choice

Without additional connectivity and access, the resulting number of users likely to travel by foot, bike, or transit is relatively small and thus no factor was applied to the resulting volumes. However, improvements are being made to accommodate pedestrian and bicycle travel adjacent to and within this project. Recognizing that the availability of existing off street pedestrian and bike pathways is limited in south Maui, and that there is a need for projects to offer options to vehicular traffic, a description of the pedestrian and bike pathway system adjacent to and within the project area is included in a figure in Appendix G. The red bike lane shown in the figure is located within the Pi'ilani Highway right of way. The blue system shown provides for a series of pedestrian and bike pathways with the project area and East Kaonoulu Street allowing for safe off street interconnectivity for the public using the various components of the land plan and providing for future connectivity to the areas north, south and east of the project area.

d) Trip Assignment

Total project related vehicular trips for 2025 and 2032 are shown in Figures 14 through 16. Figure 14 shows AM peak hour. Figure 15 shows PM peak hour. Figure 16 shows Saturday peak hour.

Volumes associated with Honua'ula Affordable Housing for the Future With Project analysis were rerouted from the temporary access off Ohukai Road to the new mauka leg of East Kaonoulu Street. It is anticipated that Honua'ula Affordable Housing will be completed by 2025. Figure 17

shows the trips associated with Honua'ula Affordable Housing with access only at East Kaonoulu Street.

Primary project related vehicular volumes were added to the Future Without Project traffic volumes. In addition, pass-by trips for Pi'ilani Promenade and the Honua'ula Affordable Housing project related volumes were rerouted which resulted in the Future (2025 and 2032) With Project traffic volumes shown in Figures 18 through 20 for AM, PM and Saturday peak hours.

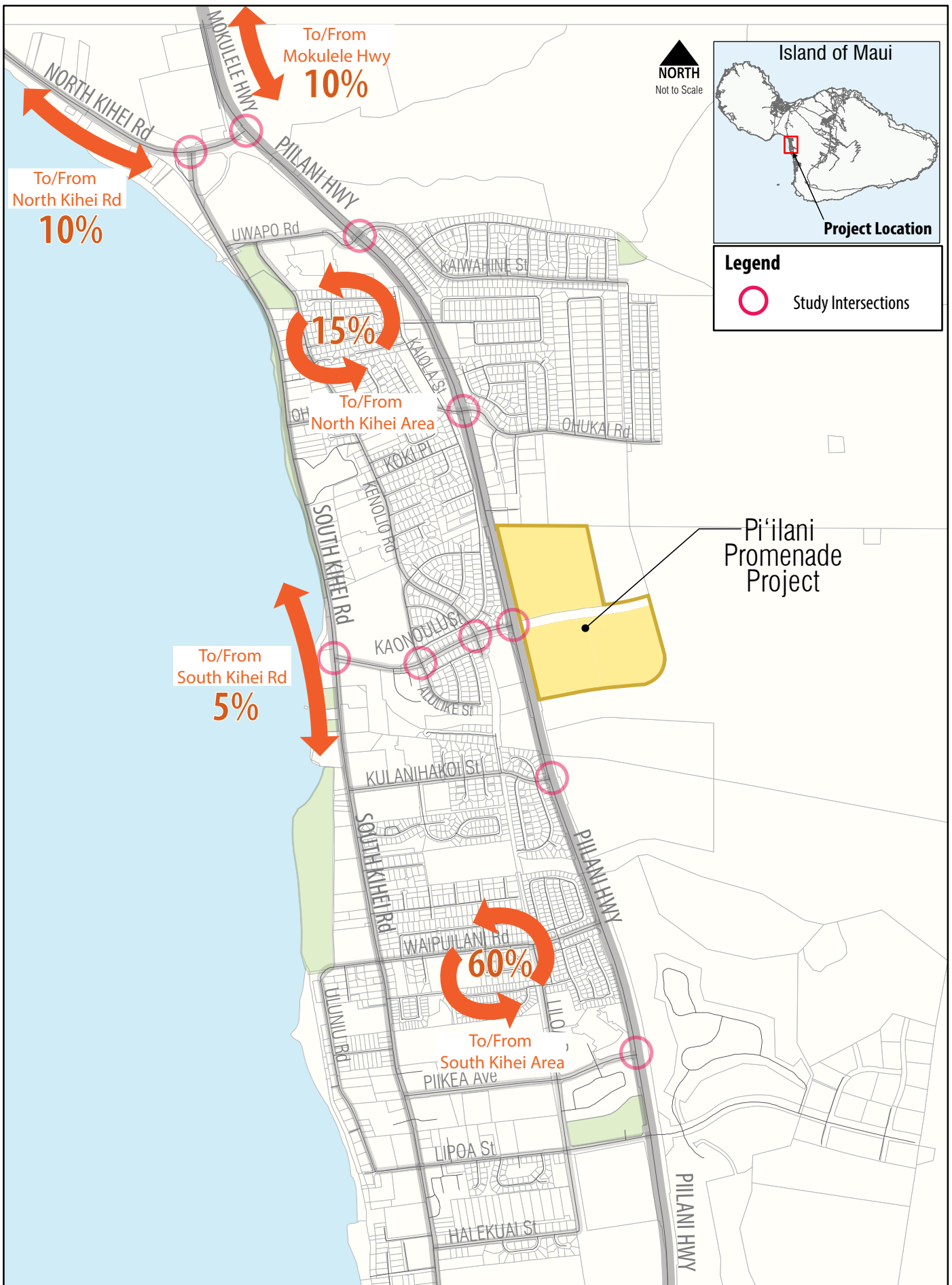
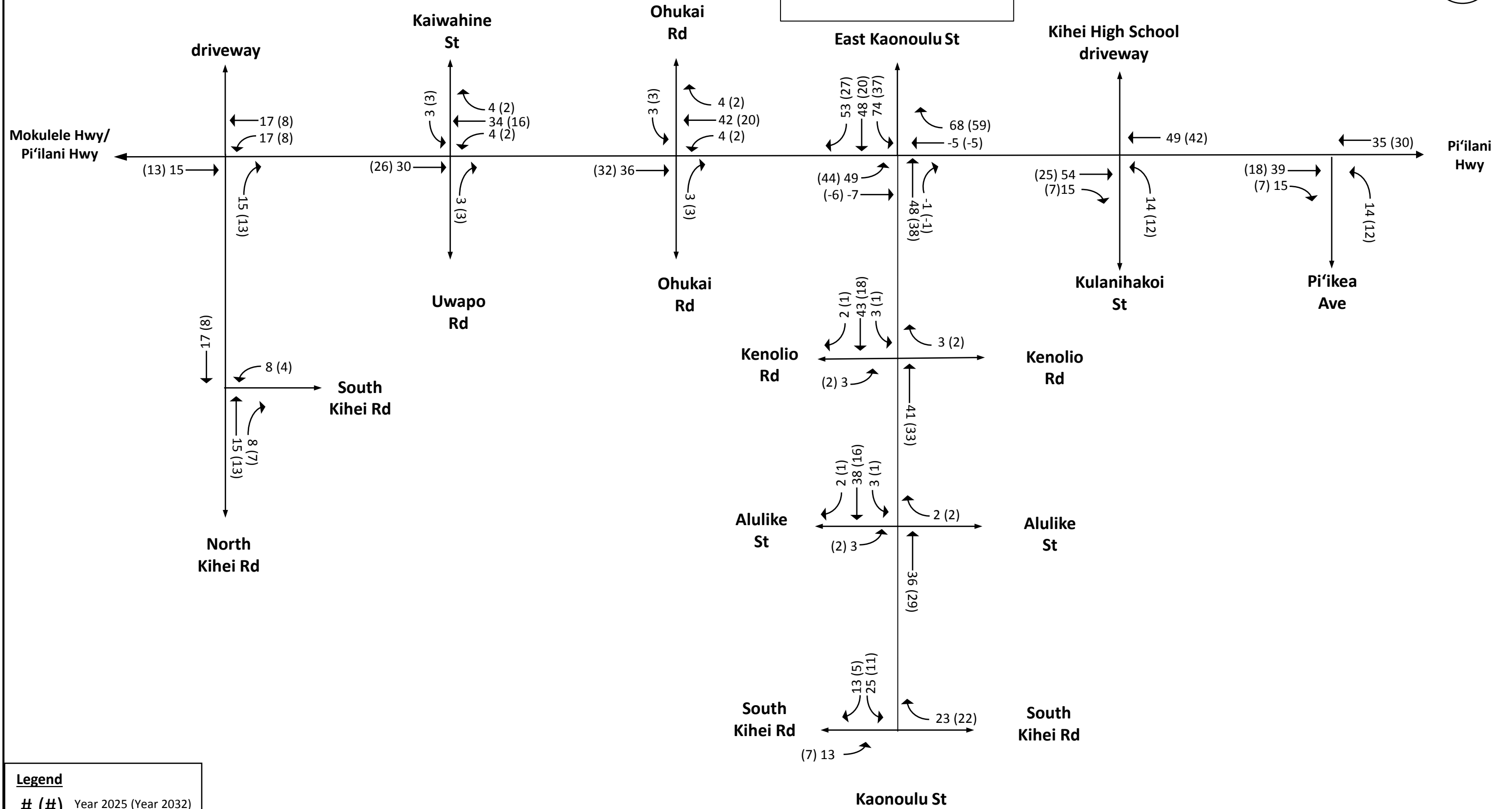
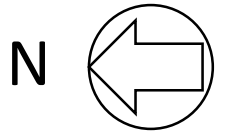


Figure 13: Future Trip Distribution

Pi'ilani Promenade – Kihei, Maui

PROPOSED PROJECT SITE



Legend
 # (#) Year 2025 (Year 2032)
 Project related peak
 hour volumes (veh/hr)

Figure 14: Project Related Trips (2025 and 2032) AM Peak Hour

Pi'ilani Promenade - Kihei, Maui



PROPOSED PROJECT SITE

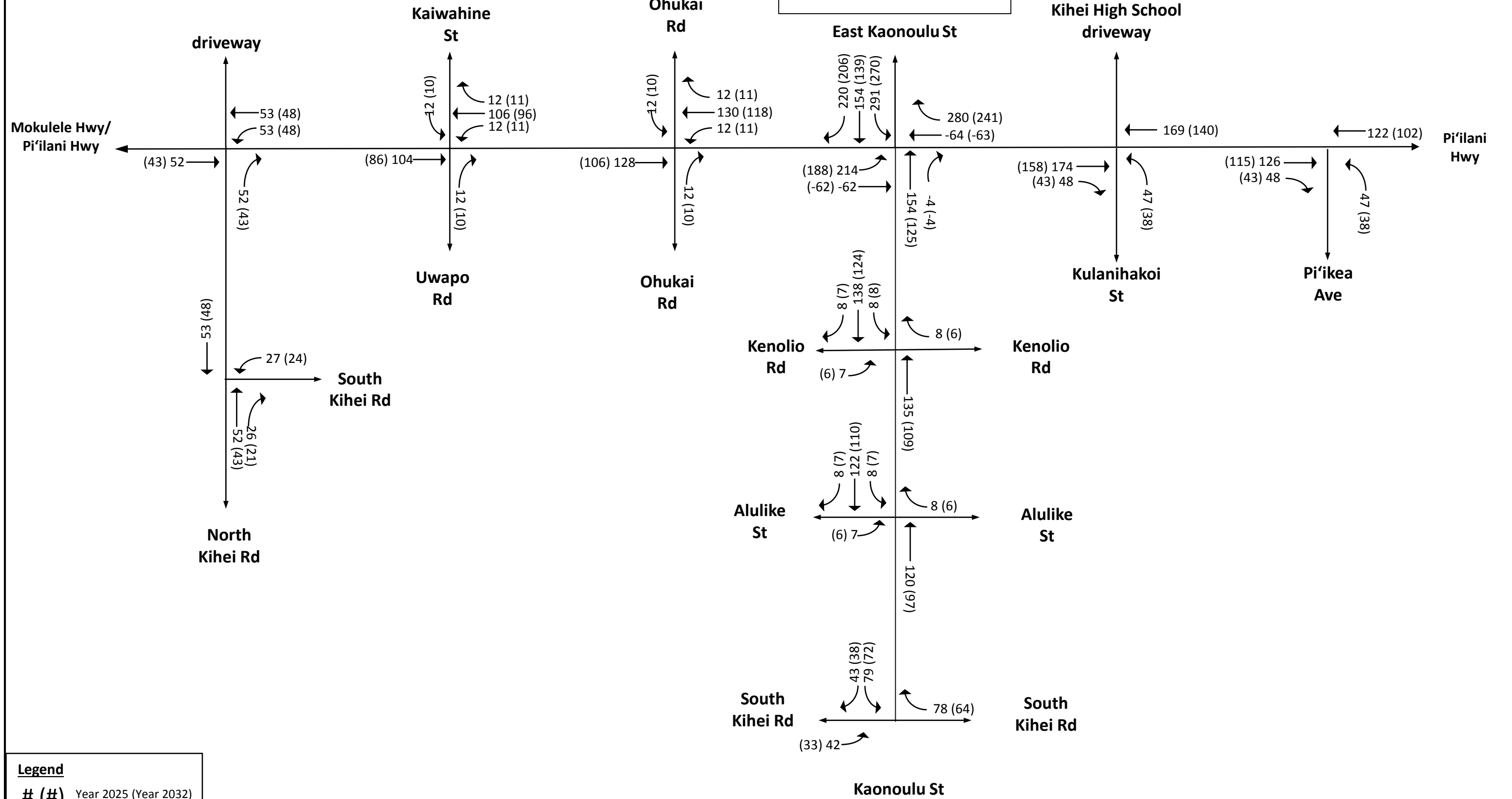
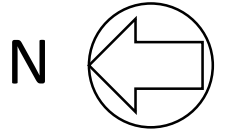


Figure 15: Project Related Trips (2025 and 2032) PM Peak Hour

Pi'ilani Promenade - Kihei, Maui

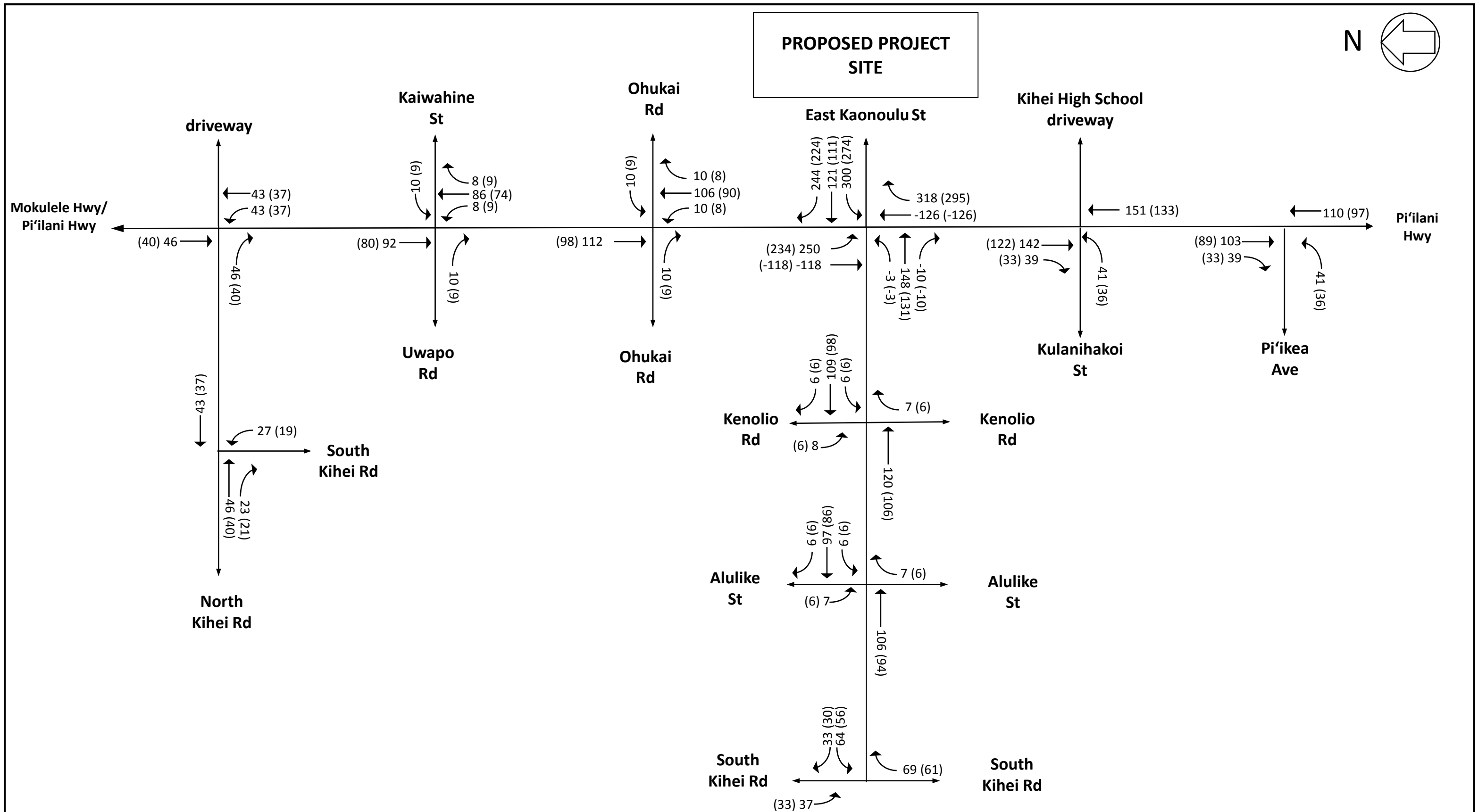
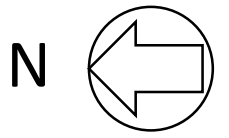
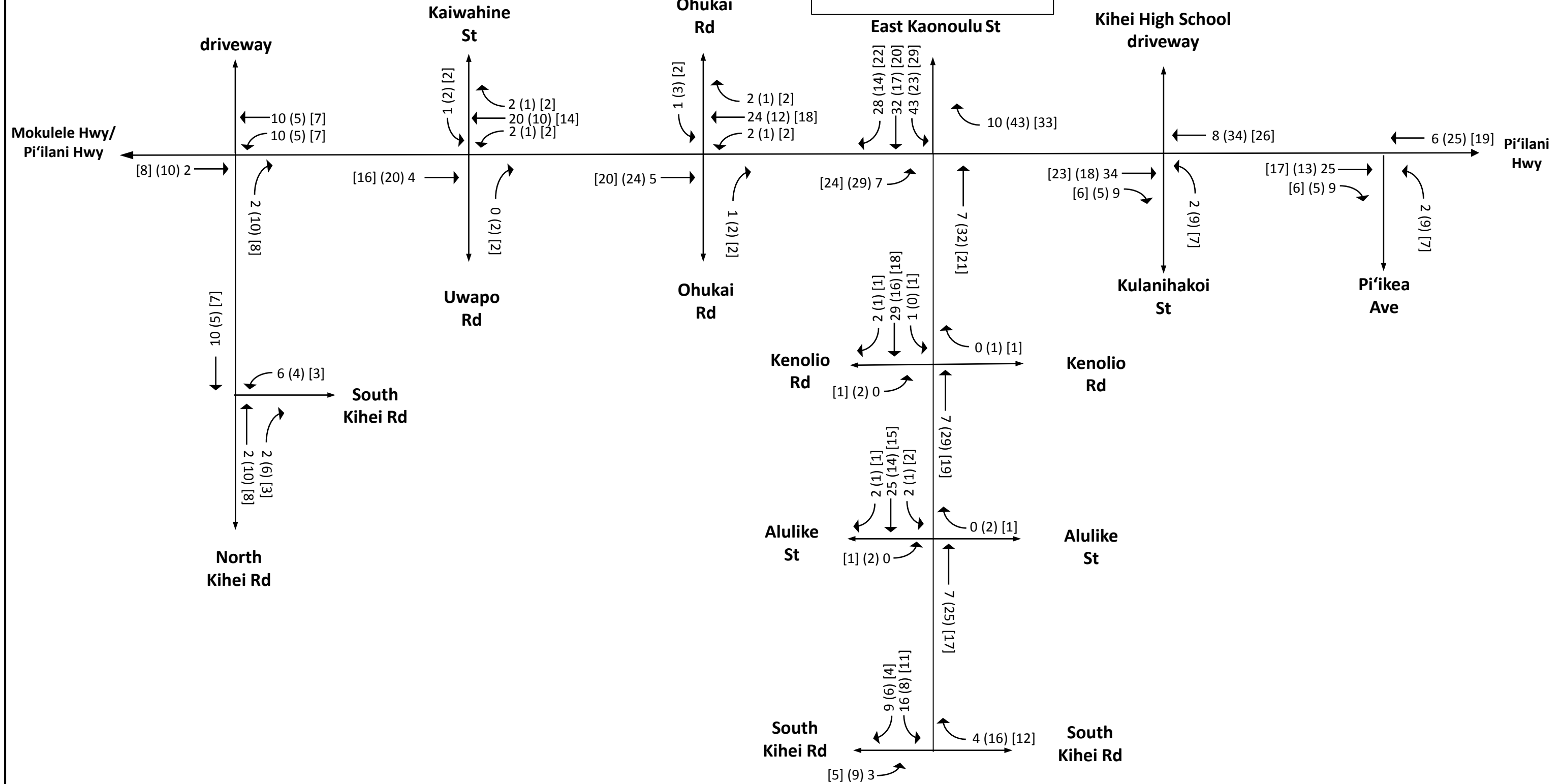
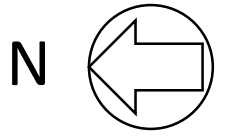


Figure 16: Project Related Trips (2025 and 2032) Saturday Peak Hour

Pi'ilani Promenade - Kihei, Maui



PROPOSED PROJECT SITE



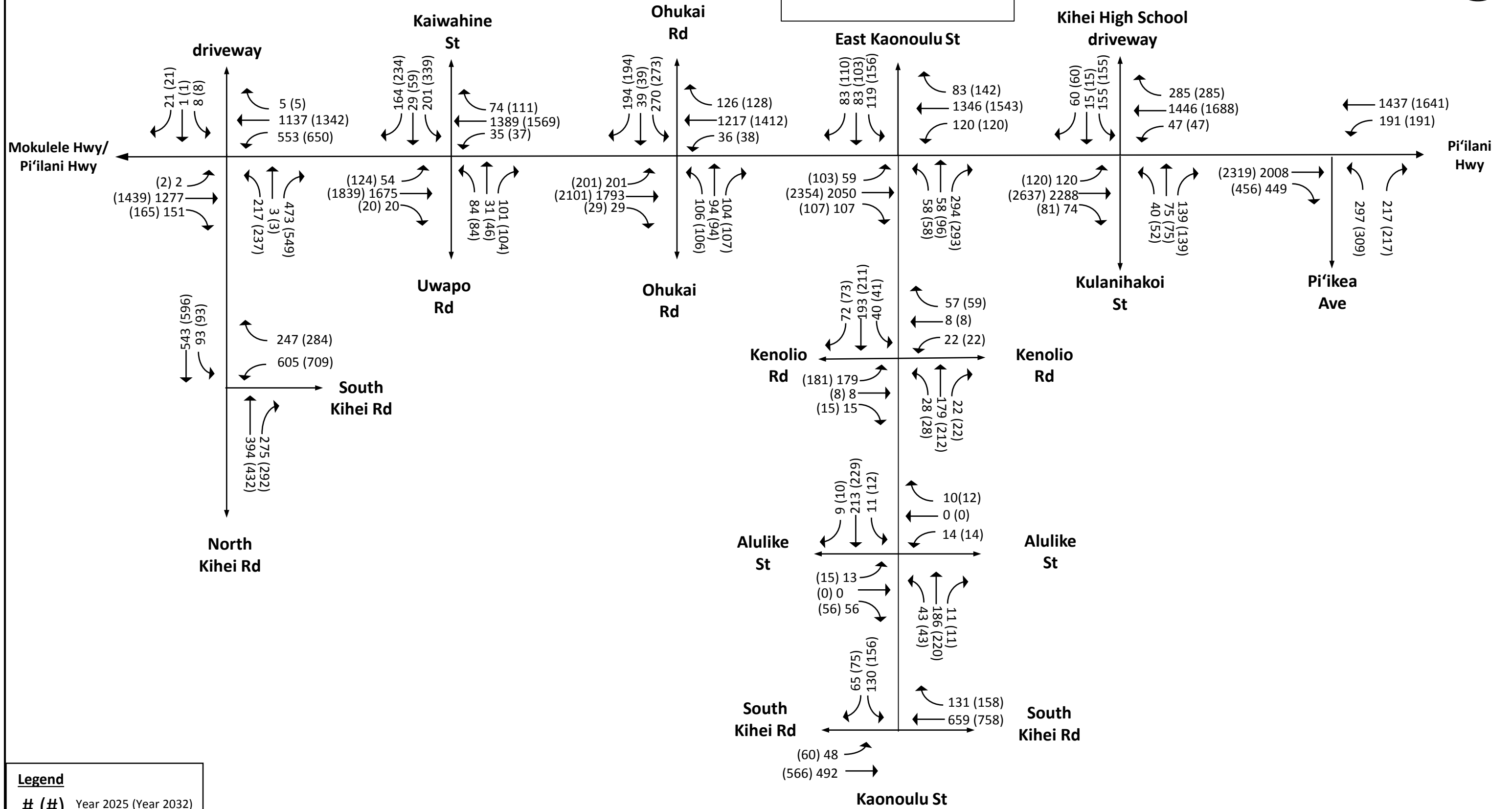
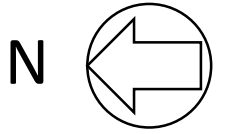
Legend
 # (#) [#] AM (PM) [Saturday] peak hour project related trips (veh/hr)

Figure 17: Honua'ula Affordable Housing Project Related Trips – AM, PM and Saturday Peak Hour

Pi'ilani Promenade - Kihei, Maui



PROPOSED PROJECT SITE



Legend
 # (#) Year 2025 (Year 2032)
 peak hour volumes
 (veh/hr)

Figure 18: Future (2025 and 2032) With Project AM Peak Hour Volumes

PROPOSED PROJECT SITE

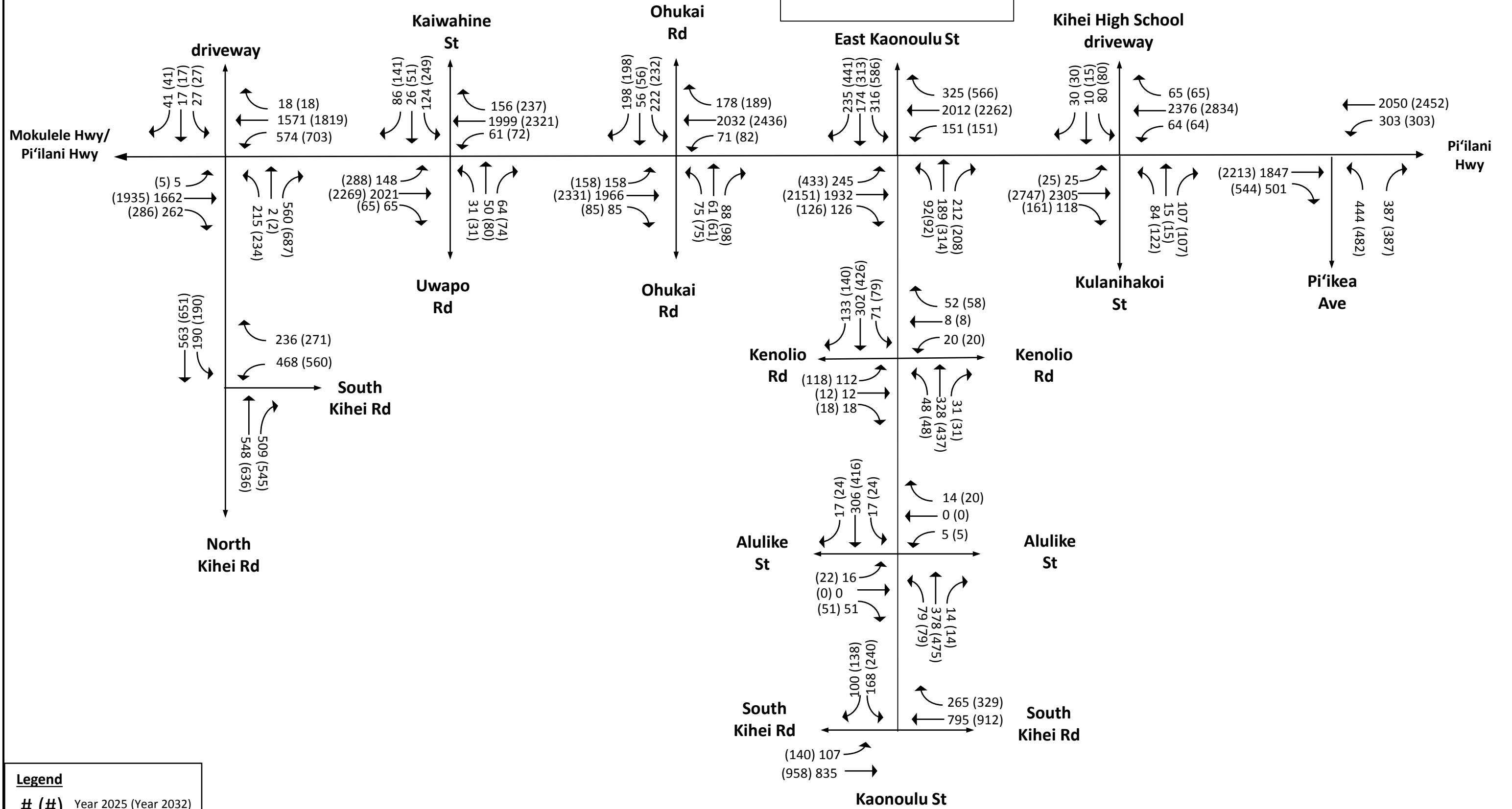
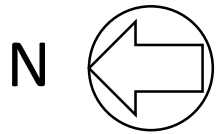
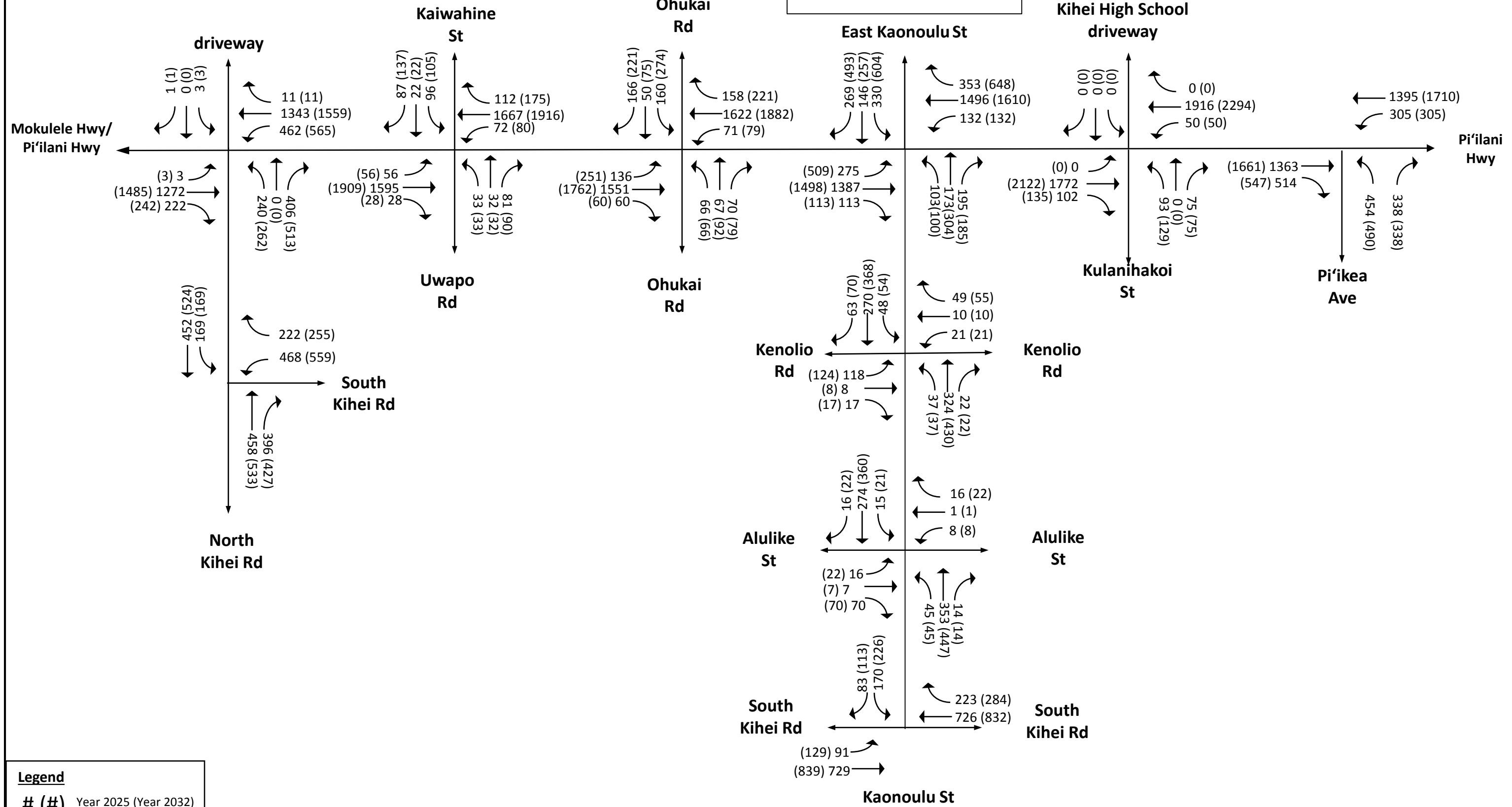
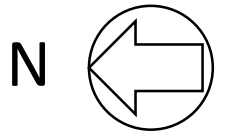


Figure 19: Future (2025 and 2032) With Project PM Peak Hour Volumes

Pi'ilani Promenade - Kihei, Maui

PROPOSED PROJECT SITE



Legend
 # (#) Year 2025 (Year 2032)
 peak hour volumes
 (veh/hr)

Figure 20: Future (2025 and 2032) With Project Saturday Peak Hour Volumes

C. Future With Project Level of Service

1. Future (2025) With Project LOS

Future (2025) With Project conditions intersection LOS, v/c ratio and delay were determined for the AM, PM and Saturday peak hours (see Table 17). For Future (2025) With Project conditions, all signalized intersection LOS maintained LOS D or better results except the intersection of Pi'ilani Highway at Kaonoulu Street which operated at LOS E during the PM peak hour. Individual turning movement LOS and v/c remained poor for some signalized intersections. Most unsignalized intersections resulted in LOS D or better for individual movements, except for the southbound left turn movement at Kenolio Road and Kaonoulu Street which operated at LOS F for PM and Saturday peak hours. Detailed analysis reports for these intersections are provided in Appendix H.

Table 17: Future (2025) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Ohukai Road	Signalized		45.3	-	D	54.2	-	D	33.0	-	C
	EB	L	75.4	0.77	E	76.5	0.71	E	69.9	0.68	E
		T	62.4	0.49	E	60.2	0.31	E	54.7	0.31	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	135.0	1.07	F	182.1	1.17	F	76.7	0.82	E
		T	50.1	0.12	D	53.2	0.20	D	46.8	0.16	D
	NB	L	66.1	0.35	E	68.0	0.57	E	60.6	0.53	E
		T	32.0	0.74	C	56.1	1.02	F	30.0	0.86	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	73.8	0.87	E	100.3	0.95	F	70.8	0.76	E
		T	34.5	0.94	C	32.7	0.95	C	24.1	0.78	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
Pi'ilani Highway and Uwapo Road/ Kaiwahine Street	Signalized		37.7	-	D	33.7	-	C	15.0	-	B
	EB	L	77.2	0.74	E	61.2	0.57	F	72.2	0.60	E
		T	76.2	0.44	E	55.8	0.50	E	65.1	0.40	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	114.1	0.96	F	79.7	0.82	E	63.7	0.57	E
		T	62.7	0.17	E	49.5	0.21	D	59.3	0.19	E
	NB	L	48.3	0.10	D	35.8	0.17	D	57.6	0.47	E
		T	12.7	0.61	B	11.0	0.81	B	9.1	0.64	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	71.4	0.46	E	60.8	0.82	E	61.8	0.40	E
		T	44.9	0.97	D	50.1	1.04	F	12.0	0.65	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*

Table 17 (Continued): Future (2025) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and North Kihei Road	Signalized		24.0	-	C	32.8	-	C	20.9	-	C
	EB	LT	43.3	0.66	D	53.7	0.65	D	51.3	0.65	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	41.0	0.09	D	55.4	0.27	E	56.2	0.08	E
		TR	43.7	0.28	D	68.4	0.63	E	56.7	0.03	E
	NB	L	44.6	0.88	D	74.3	1.00	E	50.7	0.82	D
		T	8.3	0.52	A	10.5	0.66	B	7.4	0.54	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	79.9	0.52	E	77.5	0.55	E	83.6	0.53	F
		T	25.2	0.82	C	35.2	0.93	D	18.5	0.66	B
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
South Kihei Road and North Kihei Road	Signalized		18.2	-	B	21.3	-	C	15.9	-	B
	EB	T	12.0	0.46	B	15.3	0.64	B	13.5	0.62	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	28.6	0.63	C	29.3	0.81	C	24.3	0.73	C
		T	4.9	0.25	A	0.1	0.24	A	4.1	0.21	A
	NB	L	26.4	0.79	C	27.5	0.75	C	19.6	0.66	B
		R	32.9	0.78	C	66.9	0.95	E	30.9	0.79	C
Pi'ilani Highway and Pi'ikea Avenue	Signalized		38.6	-	D	51.0	-	D	39.8	-	D
	EB	L	88.3	0.99	F	114.1	1.08	F	77.2	0.95	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	NB	L	119.9	1.04	F	130.2	1.09	F	87.4	0.93	F
		T	6.9	0.58	A	16.5	0.84	B	14.5	0.60	B
	SB	T	46.2	1.02	F	61.0	1.04	F	42.5	0.87	D
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and Kaonoulu Street	Signalized		28.5	-	C	70.3	-	E	35.9	-	D
	EB	L	79.1	0.69	E	61.6	0.42	E	87.0	0.53	F
		T	78.3	0.68	E	80.3	0.86	F	119.3	0.90	F
	WB	L	70.1	0.57	E	69.5	0.81	E	103.6	0.88	F
		T	76.7	0.73	E	75.1	0.82	E	94.0	0.72	F
	NB	L	275.9	1.33	F	214.4	1.21	F	41.9	0.6	D
		T	8.8	0.54	A	55.6	1.02	F	15.5	0.61	B
	SB	T	78.2	0.63	E	231.5	1.29	F	58.6	0.77	E
R		18.2	0.84	B	52.2	1.00	D	14.5	0.57	B	
South Kihei Road and Kaonoulu Street	Signalized		12.0	-	B	21.6	-	C	20.5	-	C
	WB	L	32.2	0.70	C	46.5	0.79	D	36.1	0.77	D
		R	28.2	0.40	C	39.4	0.53	D	30.6	0.42	C
	NB	T	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
		R	10.6	0.71	B	21.2	0.88	C	23.7	0.91	C
	SB	L	48.8	0.78	D	98.3	0.91	F	69.7	0.83	E
		T	3.3	0.38	A	5.3	0.57	A	5.4	0.56	A

Table 17 (Continued): Future (2025) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Kulanihakoi Street	Signalized		31.3	-	C	30.4	-	C	8.6	-	A
	EB	L	138.5	1.05	F	39.4	0.48	D	65.0	0.58	E
		TR	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	92.2	0.94	F	34.2	0.32	C	57.5	0.03	E
		TR	37.3	0.26	D	32.5	0.14	C	0.0	0.00	*
	NB	L	86.3	0.78	F	81.0	0.79	F	82.2	0.78	F
		T	13.8	0.68	B	28.4	0.99	C	4.5	0.67	A
		R	9.4	0.31	A	4.3	0.06	A	0.0	0.00	
	SB	L	55.3	0.81	E	61.5	0.69	E	0.0	0.00	*
		T	32.4	0.99	C	31.0	0.99	C	7.8	0.67	A
Kenolio Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	15.0	0.06	C	30.0	0.13	D	23.9	0.11	C
		TR	10.4	0.09	B	13.5	0.14	B	13.2	0.13	B
	EB	L	7.9	0.02	A	8.5	0.05	A	8.2	0.04	A
	WB	L	7.7	0.03	A	8.3	0.07	A	8.3	0.05	A
	SB	L	26.4	0.54	D	85.6	0.80	F	57.3	0.70	F
		TR	11.4	0.04	B	16.9	0.10	C	13.9	0.07	B
Kaonoulu Street and Alulike Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	LTR	13.0	0.06	B	14.9	0.06	B	15.0	0.07	C
	EB	L	7.8	0.04	A	8.2	0.07	A	8.0	0.04	A
	WB	L	7.7	0.01	A	8.3	0.02	A	8.2	0.01	A
	SB	LTR	11.0	0.11	B	14.8	0.17	B	13.9	0.20	B

* Right turn channelization; Appr = Approach; Mvmt = Movement; v/c = volume to capacity ratio;

NB = Northbound; EB = Eastbound; WB = Westbound; SB = Southbound;

L = Left turn movement; R = Right turn movement; T = Through movement

2. Future (2032) With Project LOS

Future (2032) With Project conditions intersection LOS, v/c ratio and delay were determined for the AM, PM and Saturday peak hours (see Table 18). For Future (2032) With Project conditions, the signalized intersections of Pi'ilani Highway at Ohukai Road, at Pi'ikea Avenue and at Kulanihakoi Street operated at poor LOS E or F. The unsignalized intersection of Kenolio Road and Kaonoulu Street resulted in LOS E and F for the northbound left turn movement and the southbound left turn movement. Detailed analysis reports for these intersections are provided in Appendix H.

Table 18: Future (2032) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Ohukai Road	Signalized		74.0	-	E	105.3	-	F	71.5	-	E
	EB	L	68.6	0.75	E	76.5	0.71	E	71.6	0.69	E
		T	57.2	0.45	E	60.2	0.31	E	57.7	0.44	E
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	167.9	1.17	F	274.9	1.40	F	161.6	1.15	F
		T	47.5	0.13	D	55.0	0.21	D	46.1	0.21	D
	NB	L	61.3	0.13	E	73.2	0.65	E	65.0	0.59	E
		T	34.1	0.35	C	122.7	1.20	F	83.7	1.09	F
		R	0.0	0.85	*	0.0	0.00	*	0.0	0.00	*
	SB	L	92.4	0.91	F	87.5	0.95	F	151.5	1.11	F
		T	88.7	1.11	F	75.8	1.10	F	35.5	0.92	D
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and Uwapo Road/ Kaiwahine Street	Signalized		45.8	-	D	34.5	-	C	39.3	-	D
	EB	L	94.8	0.76	F	82.8	0.61	F	55.2	0.56	E
		T	93.1	0.58	F	76.7	0.66	E	47.8	0.32	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	148.2	1.09	F	165.5	1.12	F	53.3	0.62	D
		T	65.0	0.20	E	63.1	0.27	E	44.5	0.17	D
	NB	L	64.9	0.14	E	59.7	0.33	E	30.7	0.20	C
		T	25.0	0.76	C	22.5	0.97	C	10.7	0.80	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	82.8	0.71	F	150.9	1.18	F	46.2	0.33	D
		T	37.7	1.07	F	14.2	1.02	F	67.0	1.08	F
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and North Kihei Road	Signalized		26.0	-	C	45.1	-	C	23.1	-	C
	EB	LT	45.9	0.72	D	69.2	0.72	E	47.4	0.73	D
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	41.0	0.09	D	71.6	0.34	E	45.7	0.06	D
		TR	43.7	0.28	D	112.2	0.79	F	46.3	0.02	D
	NB	L	50.2	0.99	D	82.8	1.07	F	40.4	0.84	D
		T	0.7	0.61	A	0.3	0.73	A	8.8	0.66	A
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	SB	L	79.9	0.52	E	93.5	0.56	F	72.6	0.53	E
		T	35.0	0.94	C	68.1	1.05	F	27.0	0.87	C
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
South Kihei Road and North Kihei Road	Signalized		19.0	-	B	23.0	-	C	21.4	-	C
	EB	T	14.1	0.53	B	21.2	0.78	C	16.8	0.66	B
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	30.6	0.66	C	35.2	0.83	D	34.7	0.77	C
		T	5.8	0.29	A	4.7	0.29	A	4.6	0.24	A
	NB	L	26.5	0.82	C	26.7	0.77	C	26.7	0.77	C
		R	31.4	0.79	C	54.8	0.92	D	45.1	0.87	D

Table 18 (Continued): Future (2032) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Pi'ilani Highway and Pi'ikea Avenue	Signalized		58.1	-	E	87.9	-	F	51.1	-	D
	EB	L	133.1	1.07	F	150.8	1.16	F	101.2	1.06	F
		R	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	153.1	1.07	F	184.4	1.21	F	116.6	1.05	F
		T	8.8	0.64	A	35.7	0.99	D	15.3	0.74	B
	SB	T	75.2	1.09	F	118.8	1.18	F	16.1	1.03	F
R		0.0	0.00	*	0.0	0.00	*	0.0	0.00	*	
Pi'ilani Highway and Kaonoulu Street	Signalized		44.7	-	D	204.6	-	F	101.2	-	F
	EB	L	69.5	0.47	E	54.8	0.31	D	55.0	0.33	E
		T	77.2	0.77	E	127.6	1.06	F	117.9	1.02	F
	WB	L	69.2	0.62	E	118.3	1.07	F	129.7	1.10	F
		T	75.4	0.76	E	126.7	1.05	F	81.1	0.86	F
	NB	L	275.9	1.33	F	327.9	1.47	F	131.5	0.96	F
		T	14.2	0.66	B	245.2	1.45	F	113.7	1.13	F
	SB	T	84.9	0.72	F	344.6	1.58	F	176.4	1.21	F
R		46.1	1.02	F	178.4	1.30	F	49.1	0.93	D	
South Kihei Road and Kaonoulu Street	Signalized		16.4	-	B	45.8	-	D	45.3	-	D
	WB	L	39.6	0.77	D	116.7	1.02	F	67.1	0.88	E
		R	33.8	0.42	C	56.7	0.66	E	39.9	0.50	D
	NB	T	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
		R	15.1	0.81	B	52.9	1.03	F	61.5	1.06	F
	SB	L	71.5	0.78	E	114.8	0.95	F	115.6	0.98	F
T		3.9	0.43	A	7.2	0.65	A	7.7	0.64	A	
Pi'ilani Highway and Kulanihakoi Street	Signalized		59.3	-	E	52.7	-	D	13.7	-	B
	EB	L	361.2	1.58	F	148.1	1.02	F	41.0	0.56	D
		TR	0.0	0.00	*	0.0	0.00	*	0.0	0.00	*
	WB	L	107.7	0.96	F	58.6	0.41	E	0.0	0.00	*
		TR	44.9	0.26	D	55.6	0.17	E	0.0	0.00	*
	NB	L	118.0	0.83	F	188.3	1.03	F	77.7	0.78	E
		T	17.0	0.77	B	50.2	1.06	F	9.6	0.86	A
	SB	R	9.7	0.30	A	3.8	0.06	A	0.0	0.00	
L		75.6	0.83	E	107.1	0.80	F	0.0	0.00	*	
	T	72.3	1.11	F	47.9	1.05	F	15.1	0.89	B	
Kenolio Road and Kaonoulu Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	L	16.0	0.07	C	50.4	0.22	F	36.0	0.17	E
		TR	10.7	0.10	B	16.4	0.19	C	15.8	0.18	C
	EB	L	7.9	0.02	A	9.0	0.06	A	8.5	0.04	A
	WB	L	7.8	0.03	A	8.8	0.08	A	8.7	0.06	A
	SB	L	31.7	0.60	D	324.8	1.43	F	198.6	1.16	F
TR		11.7	0.04	B	22.6	0.14	C	16.9	0.09	C	

Table 18 (Continued): Future (2032) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour			Weekend Peak Hour		
	Appr	Mvmt	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS
Kaonoulu Street and Alulike Street	Unsignalized		-	-	-	-	-	-	-	-	-
	NB	LTR	13.5	0.06	B	17.4	0.09	C	17.5	0.11	C
	EB	L	7.9	0.04	A	8.7	0.08	A	8.3	0.04	A
	WB	L	7.8	0.01	A	8.6	0.03	A	8.5	0.02	A
	SB	LTR	11.5	0.13	B	22.4	0.28	C	18.7	0.30	C

* Right turn channelization; Appr = Approach; Mvmt = Movement; v/c = volume to capacity ratio;

NB = Northbound; EB = Eastbound; WB = Westbound; SB = Southbound;

L = Left turn movement; R = Right turn movement; T = Through movement

D. Future With Project Mitigation Measures

1. Future (2025) With Project Mitigation

a) Pi'ilani Highway and Kaonoulu Street

The signalized intersection of Pi'ilani Highway and Kaonoulu Street resulted in poor LOS for Future (2025) With Project conditions. Additional roadway capacity, such as the construction of the North-South Collector Road or mauka roadway, is needed to accommodate the vehicle demand at this intersection and improve LOS.

b) Kenolio Road and Kaonoulu Street

The unsignalized intersection of Kenolio Road and Kaonoulu Street resulted in poor LOS for the southbound left turn movement. Possible mitigation includes reconstructing as a single lane roundabout.

2. Future (2032) With Project Mitigation

a) Pi'ilani Highway and Ohukai Road

The signalized intersection of Pi'ilani Highway at Ohukai Road will continue to operate at a poor LOS similar to Future (2032) Without Project conditions. Possible mitigation includes providing additional left turn lanes for the westbound and southbound approaches.

b) Pi'ilani Highway and Pi'ikea Avenue

The signalized intersection of Pi'ilani Highway at Pi'ikea Avenue also resulted in poor LOS. Possible mitigation includes adding an additional eastbound left turn lane.

c) Pi'ilani Highway and Kulanihakoi Street

The signalized intersection of Pi'ilani Highway at Kulanihakoi Street resulted in poor LOS for Future (2032) With Project conditions. Possible mitigation measures include the construction of additional turning lanes for the northbound and southbound approaches.

d) Pi'ilani Highway and Kaonoulu Street

The signalized intersection of Pi'ilani Highway at Kaonoulu Street resulted in poor LOS as well. Additional roadway capacity, such as the construction of the North-South Collector Road or mauka roadway, is needed to accommodate the vehicle demand at this intersection and improve LOS.

e) Kenolio Road and Kaonoulu Street

The unsignalized intersection of Kenolio Road and Kaonoulu Street resulted in poor LOS for the northbound and southbound left turn movements. Possible mitigation includes reconstructing as a single lane roundabout.

V. SUMMARY

The developer of Pi'ilani Promenade is proposing to construct 530,000 square feet of commercial area, 5 acres of light industrial uses, and 226 units of one and two-bedroom rental apartments on 68-acres of undeveloped land in Kihei. Primary access will be through the intersection of Pi'ilani Highway and Kaonoulu Street which will be modified to include a traffic signal and fourth leg. The developer anticipates having a full build-out and occupancy by 2032.

Existing (2016) conditions resulted in appropriate LOS conditions for all signalized intersections. Two unsignalized study intersections of Pi'ilani Highway at Kaonoulu Street and Pi'ilani Highway at Kulanihako'i Street resulted in individual turning movements with poor LOS. Signal warrants passed for these two intersections.

Future (2025) Without Project conditions resulted in appropriate intersection operations for signalized intersections and appropriate turning movement operations for unsignalized intersections. Future (2032) Without Project conditions resulted in all signalized intersections maintaining LOS D or better results except for the intersection of Pi'ilani Highway at Ohukai Road. All unsignalized intersection turning movements resulted in LOS C or better.

A portion of East Kaonoulu Street is being constructed with the development of Pi'ilani Promenade by 2025. This will add a mauka leg to the intersection of Pi'ilani Highway and Kaonoulu Street. Honua'ula Affordable Housing is also anticipated to be completed by 2025 and will use access through East Kaonoulu Street. Additional intersection modifications include:

- Southbound approach will have double left turn lanes, two through lanes, and a channelized right turn lane.
- Northbound approach will have a dedicated left turn lane, two through lanes, and a channelized right turn lane.
- Eastbound approach will have a left turn lane, a through lane, and a channelized right turn lane.
- Westbound approach will have dual left turn lanes, a through lane and channelized right turn lane with an acceleration lane.

The project also includes the construction of a shared-use pedestrian and bike path along the mauka-side of Pi'ilani Highway, adjacent to the proposed development and within the project site, in addition to bike lanes on Pi'ilani Highway.

Future (2025) With Project conditions resulted in all signalized intersection LOS maintaining LOS D or better results except the intersection of Pi'ilani Highway at Kaonoulu Street. Most unsignalized intersections resulted in LOS D or better for individual movements, except for the intersection of Kenolio Road at Kaonoulu Street. For Future (2032) With Project conditions, the signalized intersections of Pi'ilani Highway at Ohukai Road, Pi'ikea Avenue, and Kulanihako'i Street operated at poor LOS E or F. The unsignalized intersection of Kenolio Road and Kaonoulu Street also resulted in poor LOS for some turning movements. Future roadway construction in the area will provide additional capacity which should alleviate the vehicle demand on Pi'ilani Highway and improve intersection LOS.

VI. REFERENCES

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Appendix A

HDOT Comment-Response Matrix

Hawaii Department of Transportation Comment-Response Matrix

	10/6/14 - HDOT Comment	8/11/15 - PRA Response	2/2/16 - SSFM Proposed Action	2/19/16 - HDOT Response (Nami Wong)
1	Drive B South and Drive B North are too close to the Piilani Highway/Kaonoulu Street intersection.	Acknowledged.	Need to define acceptable from State standpoint so can plan appropriate access control.	Leave as is; no need to move.
2	The forecasted future background traffic volumes should include the Kihei Residential and the Downtown Kihei (Krauz) development or a discussion justifying why these projects were not included.	Acknowledged. An updated list of other known projects that will be included in the background forecasts is attached.	Have identified latest credible projects in area for consideration.	OK.
3	The 2018 background Level of Service (LOS) analysis includes several transportation improvements at the Piilani Highway/Ohukai Road intersection and Piilani Highway/Kaiwahine Street/Uwapo Road intersection that were assumed to be in place. For this assumption to be considered valid, the TIAR must confirm by whom and when these improvements are programmed or committed to be constructed. Otherwise, these improvements cannot be assumed to be in place or Piilani Promenade must commit to providing the improvements.	The improvements referred to at the intersection of Piilani Highway and Ohukai Road have since been constructed. It is our understanding that these improvements were constructed at the State's expense. The improvements shown as recommended in the Piilani Promenade TIAR will be revised to reflect this improvement.	Pi'ilani Highway/Ohukai intersection improvements were constructed late 2015. Pi'ilani Highway/Uwapo intersection improvements have not been made and programming is not known.	Verify when improvements done or proposed, and by who.
4	Tables 10 through 14 in the TIAR should include reference to the applicable ITE code for developing the trip generation for each land use. We note that the net new trips generated by the North Parcel's retail land use, as indicated in Table 15, is not consistent for a 100,000 square foot size development.	Land Use codes will be added to the tables. The trip generation analysis for the North Parcel will be corrected. The trip generation calculations will also be revised to reflect minor changes in the development plan.	Will include information as it relates to most recent site plan.	OK.
5	The application of the pass-by trips appears to be incorrect since access to the development would be more typically classified as diverted link trips being that all trips to Piilani Promenade would be via the Piilani Highway and Kaonoulu Street intersection. However, the Department of Transportation (DOT) may consider allowing trip reductions to be applied in determining the net new trips generated, with justification.	Pass-by trips are defined as trips "attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. Pass-by trips are not diverted from another roadway." Piilani Highway is adjacent to the project site and for all practical purposes, the intersection of Piilani Highway at Kaonoulu Street is a driveway to and from the project until the Upcountry Highway is constructed.	Will use definition/rates as previously detailed from PRA.	Expand discussion of pass-by vs. diverted links.
6	The methodology used to develop the AM peak hour pass-by trips in Table 15 based on Table 11, which indicates that no formula was provided, must be validated.	Justification will be added to the TIAR.	Will use definition/rates as previously detailed from PRA.	Justify.
7	Trip distribution (75% Kihei and south Maui, 25% north) is acceptable. However, Indicate how the northern traffic will also impact Piilani Highway, not just Mokulele Highway, State Route 311, and North Kihei Road, State Route 310.	Clarification is needed. Intersections along these roadways were included in the TIAR	Will update report to justify use and show how volumes are distributed.	OK.
8	For consistency, regional traffic growth factors must be applied to all analyzed movements not just through movements.	We have modified the horizon year and expanded the list of other known projects to be included in the background projections. The new list essentially represents build out of South Maui. Recommend that the background growth rate be eliminated as suggested by State of Hawaii Department of Transportation at one of our earlier meetings.	Will follow recommendations noted by PRA.	Do own analysis based on research.
9	Piilani Promenade shall provide satisfactory pedestrian connections between the project and Kihei High School	A pedestrian circulation plan has been developed since the TIAR was prepared. The plan will be included in the final TIAR.	See reponse from PRA.	Address pedestrian refuge at intersection.
10	The discussion for acceptable LOS on Piilani Highway, State Route 31, does not reflect current DOT requirements. It implies that LOS E or F on minor approaches is acceptable as a default threshold. Existing LOS conditions worse (lower) than D are generally not acceptable by the DOT. In accordance with the DOT guidelines, the Applicant shall mitigate all transportation impacts due to the project in order to maintain the satisfactory traffic operating LOS and delay levels at the without the project conditions for the horizon (background) year. In addition, should the background year LOS without the project be lower than the desirable DOT threshold of LOS D, the Applicant may be required to provide mitigation improvements to improve the State facilities to LOS D or better with the project condition.	Acknowledged. However, the last sentence implies that this project may be required to mitigate an unacceptable background (without project) level-of-service that is the result of traffic generated by another project.	Per latest discussions with HDOT, it is understood that LOS E/F may result at some intersections however this is a known issue which the administration has decided to address on a regional level.	"...which the administration has decided to address on a regional level." Exception taken to underscore (quotation). Project to mitigate own impacts.
11	Piilani Promenade shall provide all transportation mitigation improvements recommended in the TIAR that is accepted by the DOT, and at no cost to the State.	Acknowledged.	See reponse from PRA.	OK.

Hawaii Department of Transportation Comment-Response Matrix

10/6/14 - HDOT Comment	8/11/15 - PRA Response	2/2/16 - SSFM Proposed Action	2/19/16 - HDOT Response (Nami Wong)
<p>12 We are concerned about when the Honuauula Affordable Housing project will actually be constructed. The TIAR included Piilani Promenade and Honuauula Affordable Housing in its analysis with 2018 as the common background year, but no information about the plans for the actual buildout of the Affordable Housing project was provided. If the actual development year is different from Piilani Promenade, an updated TIAR will be required to determine what impacts the Affordable Housing project may have at its buildout year and any additional improvements that are required shall be provided by its developer, and at no cost to the State.</p>	<p>Acknowledged.</p>	<p>The Honuauula Affordable Housing project is a separate development and will be accounted for under "without project" conditions.</p>	<p>OK.</p>

Appendix B

Intersection Peak Period Traffic Counts
and 24-Hour Traffic Data

ITM Peak Hour Summary

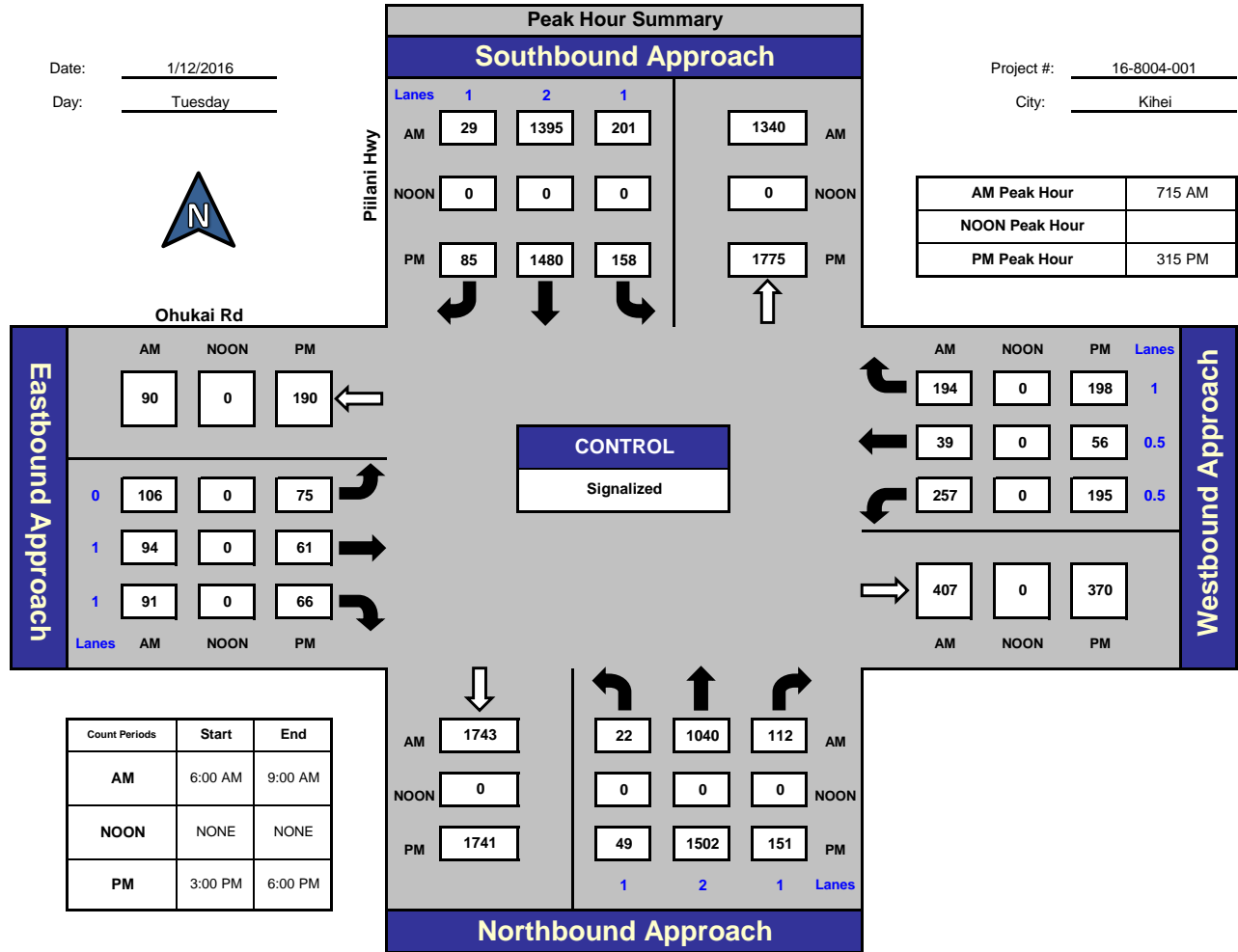


Prepared by:
National Data & Surveying Services

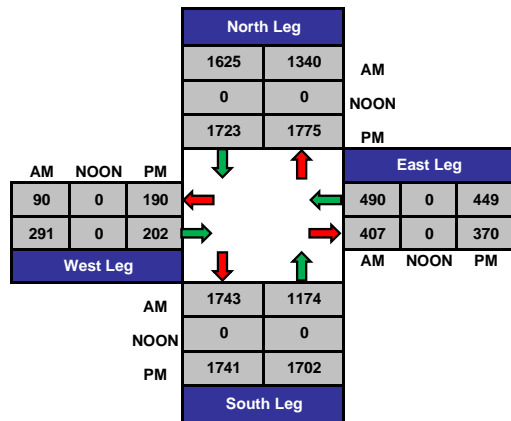
Piilani Hwy and Ohukai Rd , Kihei

Date: 1/12/2016
Day: Tuesday

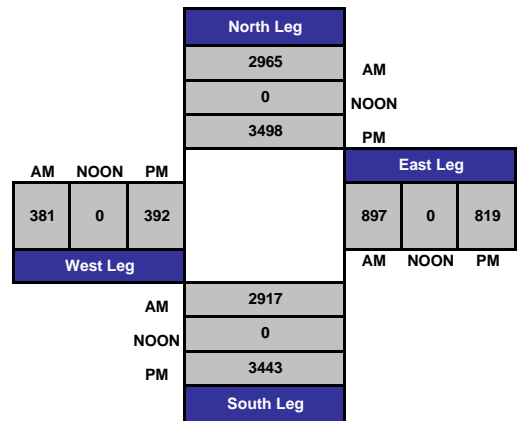
Project #: 16-8004-001
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-001

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5	WR 1	
6:00 AM	2	113	7	13	122	4	6	6	4	11	3	24	315
6:15 AM	2	154	13	24	189	1	8	5	8	23	4	30	461
6:30 AM	1	216	6	21	262	4	23	5	12	30	5	41	626
6:45 AM	4	212	18	22	218	1	24	13	18	36	3	31	600
7:00 AM	4	273	15	26	303	9	26	11	25	36	7	42	777
7:15 AM	7	250	27	47	321	12	31	18	22	62	7	52	856
7:30 AM	1	285	23	47	389	2	28	22	37	62	6	51	953
7:45 AM	12	253	32	62	375	8	22	32	15	72	12	46	941
8:00 AM	2	252	30	45	310	7	25	22	17	61	14	45	830
8:15 AM	7	230	26	48	327	4	12	17	14	44	3	37	769
8:30 AM	3	225	25	40	307	10	27	16	16	43	4	43	759
8:45 AM	6	212	25	33	296	10	22	12	13	39	6	21	695

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			

TOTAL VOLUMES :	NL 51	NT 2675	NR 247	SL 428	ST 3419	SR 72	EL 254	ET 179	ER 201	WL 519	WT 74	WR 463	TOTAL 8582
APPROACH %'s :	1.72%	89.98%	8.31%	10.92%	87.24%	1.84%	40.06%	28.23%	31.70%	49.15%	7.01%	43.84%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	22	1040	112	201	1395	29	106	94	91	257	39	194	3580
PEAK HR FACTOR :	0.950			0.913			0.836			0.942			0.939

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-001

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5	WR 1	
3:00 PM	8	354	27	41	324	14	10	17	15	55	9	40	914
3:15 PM	15	388	39	47	355	25	21	16	14	41	10	38	1009
3:30 PM	8	424	37	42	341	19	20	18	14	47	15	61	1046
3:45 PM	10	355	35	31	399	18	11	9	23	56	14	54	1015
4:00 PM	16	335	40	38	385	23	23	18	15	51	17	45	1006
4:15 PM	11	356	39	37	327	22	16	23	13	51	16	51	962
4:30 PM	15	390	46	79	310	11	12	24	13	54	19	51	1024
4:45 PM	12	320	40	44	373	22	13	18	20	56	20	40	978
5:00 PM	14	288	23	40	342	25	19	22	14	62	25	53	927
5:15 PM	9	307	21	39	359	17	18	10	13	42	14	33	882
5:30 PM	6	263	25	33	382	26	19	9	10	34	8	39	854
5:45 PM	13	229	28	35	317	23	11	21	7	38	12	32	766

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 137	NT 4009	NR 400	SL 506	ST 4214	SR 245	EL 193	ET 205	ER 171	WL 587	WT 179	WR 537	TOTAL 11383
APPROACH %'s :	3.01%	88.19%	8.80%	10.19%	84.87%	4.93%	33.92%	36.03%	30.05%	45.05%	13.74%	41.21%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	49	1502	151	158	1480	85	75	61	66	195	56	198	4076
PEAK HR FACTOR :	0.907			0.961			0.902			0.905			0.974

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-001

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Pillani Hwy		Pillani Hwy			Ohukai Rd			Ohukai Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5	WR 1	
6:00 AM	2	111	7	13	114	4	6	6	4	11	3	24	305
6:15 AM	2	149	12	24	183	1	8	5	8	23	4	30	449
6:30 AM	1	213	6	19	250	4	22	5	12	30	4	41	607
6:45 AM	4	207	18	20	211	1	22	12	18	34	3	29	579
7:00 AM	3	268	15	25	292	9	26	11	25	36	6	42	758
7:15 AM	6	248	26	45	311	9	31	18	21	61	7	52	835
7:30 AM	1	283	21	47	381	2	28	21	37	61	6	51	939
7:45 AM	12	247	32	61	368	8	22	32	15	70	12	46	925
8:00 AM	2	248	29	43	304	7	25	22	17	59	13	43	812
8:15 AM	7	223	26	46	317	4	12	17	14	43	3	35	747
8:30 AM	3	219	24	40	300	9	27	16	16	42	4	42	742
8:45 AM	5	205	25	32	287	10	22	12	13	37	6	20	674

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			

TOTAL VOLUMES :	NL 48	NT 2621	NR 241	SL 415	ST 3318	SR 68	EL 251	ET 177	ER 200	WL 507	WT 71	WR 455	TOTAL 8372
APPROACH %'s :	1.65%	90.07%	8.28%	10.92%	87.29%	1.79%	39.97%	28.18%	31.85%	49.08%	6.87%	44.05%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	21	1026	108	196	1364	26	106	93	90	251	38	192	3511
PEAK HR FACTOR :	0.947			0.907			0.840			0.939			0.935

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-001

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Pillani Hwy		Pillani Hwy			Ohukai Rd			Ohukai Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5		WR 1
LANES:													
3:00 PM	8	343	26	40	315	14	10	17	14	55	9	40	891
3:15 PM	15	381	38	47	342	25	21	16	13	41	10	38	987
3:30 PM	8	415	37	42	336	19	20	16	14	47	15	60	1029
3:45 PM	10	351	35	30	395	18	11	9	23	55	14	53	1004
4:00 PM	15	327	39	37	380	23	23	18	15	51	17	44	989
4:15 PM	11	354	39	37	323	22	16	23	13	51	16	50	955
4:30 PM	14	379	45	76	308	11	12	24	13	54	19	50	1005
4:45 PM	12	306	39	44	371	22	13	18	19	56	20	40	960
5:00 PM	14	285	23	38	337	25	19	22	14	62	25	53	917
5:15 PM	9	302	21	39	356	17	17	10	13	42	14	33	873
5:30 PM	6	258	25	32	380	26	19	9	10	34	8	37	844
5:45 PM	13	226	28	35	309	23	11	21	7	36	12	32	753

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 135	NT 3927	NR 395	SL 497	ST 4152	SR 245	EL 192	ET 203	ER 168	WL 584	WT 179	WR 530	TOTAL 11207
APPROACH %'s :	3.03%	88.11%	8.86%	10.16%	84.84%	5.01%	34.10%	36.06%	29.84%	45.17%	13.84%	40.99%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	48	1474	149	156	1453	85	75	59	65	194	56	195	4009
PEAK HR FACTOR :	0.908			0.956			0.888			0.912			0.974

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-001

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	2	0	0	8	0	0	0	0	0	0	0	10
6:15 AM	0	5	1	0	6	0	0	0	0	0	0	0	12
6:30 AM	0	3	0	2	12	0	1	0	0	0	1	0	19
6:45 AM	0	5	0	2	7	0	2	1	0	2	0	2	21
7:00 AM	1	5	0	1	11	0	0	0	0	0	1	0	19
7:15 AM	1	2	1	2	10	3	0	0	1	1	0	0	21
7:30 AM	0	2	2	0	8	0	0	1	0	1	0	0	14
7:45 AM	0	6	0	1	7	0	0	0	0	2	0	0	16
8:00 AM	0	4	1	2	6	0	0	0	0	2	1	2	18
8:15 AM	0	7	0	2	10	0	0	0	0	1	0	2	22
8:30 AM	0	6	1	0	7	1	0	0	0	1	0	1	17
8:45 AM	1	7	0	1	9	0	0	0	0	2	0	1	21

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	3	54	6	13	101	4	3	2	1	12	3	8	210
	4.76%	85.71%	9.52%	11.02%	85.59%	3.39%	50.00%	33.33%	16.67%	52.17%	13.04%	34.78%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	1	14	4	5	31	3	0	1	1	6	1	2	69
PEAK HR FACTOR :	0.792			0.650			0.500			0.450			0.935

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-001

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
3:00 PM	0	11	1	1	9	0	0	0	1	0	0	0	23
3:15 PM	0	7	1	0	13	0	0	0	1	0	0	0	22
3:30 PM	0	9	0	0	5	0	0	2	0	0	0	1	17
3:45 PM	0	4	0	1	4	0	0	0	0	1	0	1	11
4:00 PM	1	8	1	1	5	0	0	0	0	0	0	1	17
4:15 PM	0	2	0	0	4	0	0	0	0	0	0	1	7
4:30 PM	1	11	1	3	2	0	0	0	0	0	0	1	19
4:45 PM	0	14	1	0	2	0	0	0	1	0	0	0	18
5:00 PM	0	3	0	2	5	0	0	0	0	0	0	0	10
5:15 PM	0	5	0	0	3	0	1	0	0	0	0	0	9
5:30 PM	0	5	0	1	2	0	0	0	0	0	0	2	10
5:45 PM	0	3	0	0	8	0	0	0	0	2	0	0	13

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	2	82	5	9	62	0	1	2	3	3	0	7	176
	2.25%	92.13%	5.62%	12.68%	87.32%	0.00%	16.67%	33.33%	50.00%	30.00%	0.00%	70.00%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	1	28	2	2	27	0	0	2	1	1	0	3	67
PEAK HR FACTOR :	0.775			0.558			0.375			0.500			0.974

CONTROL : Signalized

ITM Peak Hour Summary

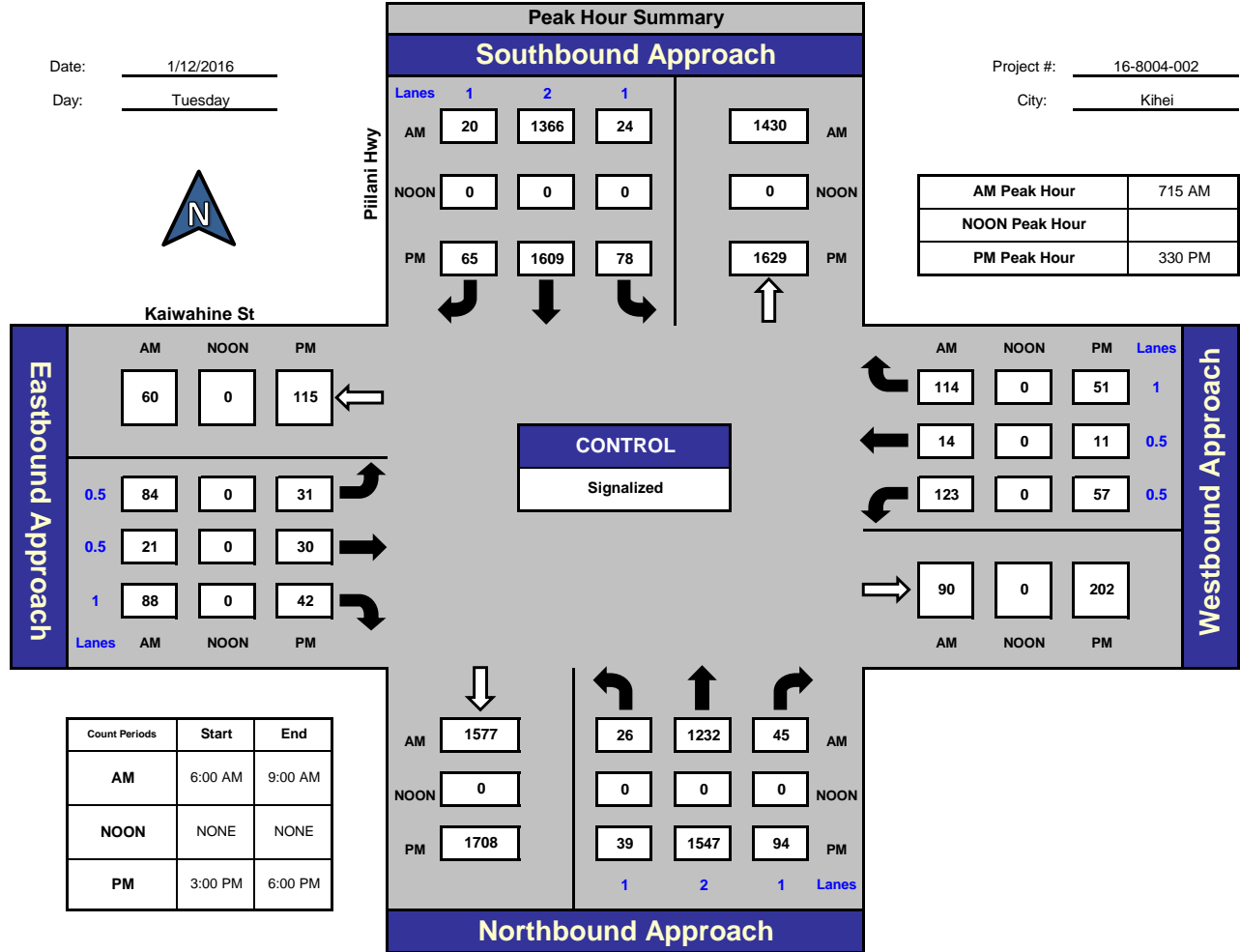


Prepared by:
National Data & Surveying Services

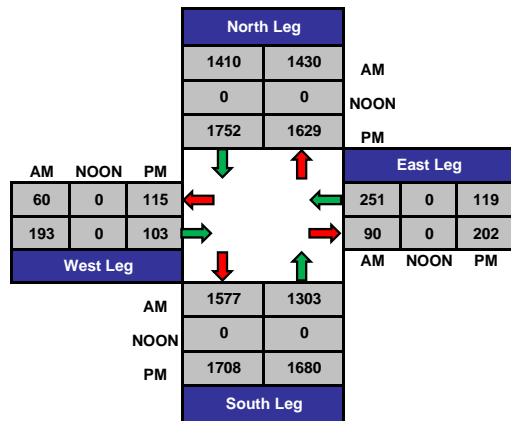
Piilani Hwy and Kaiwahine St, Kihei

Date: 1/12/2016
Day: Tuesday

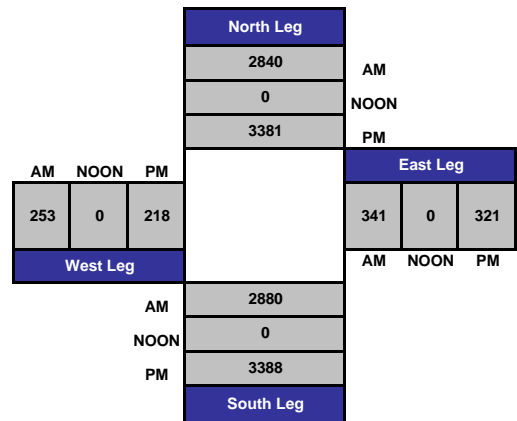
Project #: 16-8004-002
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0.5	ET 0.5	ER 1	WL 0.5	WT 0.5	WR 1	
6:00 AM	3	134	4	5	122	2	7	1	6	16	4	15	319
6:15 AM	6	185	4	1	195	5	6	3	5	13	7	19	449
6:30 AM	3	248	4	7	246	3	21	0	17	19	2	19	589
6:45 AM	6	268	11	2	206	3	23	3	11	18	6	32	589
7:00 AM	8	308	5	2	272	5	12	2	14	30	7	30	695
7:15 AM	4	355	9	2	339	5	21	3	28	31	4	49	850
7:30 AM	4	312	6	1	339	7	23	8	25	42	8	31	806
7:45 AM	10	278	13	8	366	4	11	4	16	33	1	19	763
8:00 AM	8	287	17	13	322	4	29	6	19	17	1	15	738
8:15 AM	7	257	4	5	340	7	8	9	22	10	5	17	691
8:30 AM	7	310	9	4	327	5	15	3	12	13	6	19	730
8:45 AM	7	220	7	10	305	10	9	4	15	13	2	16	618

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 73	NT 3162	NR 93	SL 60	ST 3379	SR 60	EL 185	ET 46	ER 190	WL 255	WT 53	WR 281	TOTAL 7837
APPROACH %'s :	2.19%	95.01%	2.79%	1.71%	96.57%	1.71%	43.94%	10.93%	45.13%	43.29%	9.00%	47.71%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	26	1232	45	24	1366	20	84	21	88	123	14	114	3157
PEAK HR FACTOR :	0.885			0.933			0.862			0.747			0.929

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Piliani Hwy			Piliani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0.5	ET 0.5	ER 1	WL 0.5	WT 0.5	WR 1	
3:00 PM	18	359	14	22	338	11	9	9	9	17	5	8	819
3:15 PM	12	406	15	18	395	12	8	12	8	15	3	12	916
3:30 PM	6	411	22	24	360	18	11	9	9	17	3	8	898
3:45 PM	10	378	26	22	443	14	9	5	11	9	5	8	940
4:00 PM	12	349	13	14	424	15	6	6	9	12	1	18	879
4:15 PM	11	409	33	18	382	18	5	10	13	19	2	17	937
4:30 PM	9	380	25	18	339	17	7	10	13	15	0	9	842
4:45 PM	12	331	14	31	381	13	5	9	14	19	1	10	840
5:00 PM	12	329	14	19	405	11	3	6	16	18	8	9	850
5:15 PM	11	332	16	34	375	29	9	13	14	13	3	13	862
5:30 PM	7	313	14	18	407	16	7	9	23	23	4	12	853
5:45 PM	11	246	19	17	360	18	4	10	19	11	3	12	730

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			

TOTAL VOLUMES :	NL 131	NT 4243	NR 225	SL 255	ST 4609	SR 192	EL 83	ET 108	ER 158	WL 188	WT 38	WR 136	TOTAL 10366
APPROACH %'s :	2.85%	92.26%	4.89%	5.04%	91.16%	3.80%	23.78%	30.95%	45.27%	51.93%	10.50%	37.57%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	39	1547	94	78	1609	65	31	30	42	57	11	51	3654
PEAK HR FACTOR :	0.927			0.914			0.888			0.783			0.972

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	2	1	1	2	1	0.5	0.5	1	0.5	0.5	1	
6:00 AM	3	132	4	5	117	1	7	0	5	15	4	15	308
6:15 AM	6	179	4	0	189	4	6	3	4	13	7	19	434
6:30 AM	3	247	3	4	233	2	20	0	17	19	2	17	567
6:45 AM	5	256	11	2	197	3	23	3	11	16	6	32	565
7:00 AM	6	306	4	1	264	5	11	2	13	29	7	30	678
7:15 AM	4	353	9	2	324	5	20	3	26	31	4	49	830
7:30 AM	4	311	5	1	334	6	23	8	24	42	8	31	797
7:45 AM	10	271	13	8	357	4	11	3	15	33	1	17	743
8:00 AM	8	281	17	13	317	4	28	6	18	17	1	15	725
8:15 AM	6	248	4	5	327	7	8	9	21	10	5	17	667
8:30 AM	7	303	9	4	320	5	14	3	12	13	6	19	715
8:45 AM	7	214	7	10	294	9	9	4	15	13	2	16	600

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	69	3101	90	55	3273	55	180	44	181	251	53	277	7629
	2.12%	95.12%	2.76%	1.63%	96.75%	1.63%	44.44%	10.86%	44.69%	43.20%	9.12%	47.68%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	26	1216	44	24	1332	19	82	20	83	123	14	112	3095
PEAK HR FACTOR :	0.878			0.932			0.841			0.741			0.932

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Piliani Hwy			Piliani Hwy			Kaiwahine St			Kaiwahine St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0.5	ET 0.5	ER 1	WL 0.5	WT 0.5	WR 1	
3:00 PM	18	344	13	21	324	11	9	9	9	17	4	8	787
3:15 PM	11	399	15	18	379	12	8	12	8	15	3	10	890
3:30 PM	6	401	22	24	355	18	11	9	9	17	3	8	883
3:45 PM	10	370	25	22	433	14	9	5	11	9	5	8	921
4:00 PM	12	337	13	14	416	15	6	6	9	12	1	18	859
4:15 PM	11	404	33	18	375	18	5	9	13	19	2	16	923
4:30 PM	9	376	25	18	338	17	7	10	13	15	0	9	837
4:45 PM	11	319	13	31	380	13	5	9	14	19	1	10	825
5:00 PM	12	328	14	18	398	11	3	6	16	18	8	9	841
5:15 PM	11	328	16	34	372	29	9	13	14	13	3	13	855
5:30 PM	7	307	14	18	405	16	7	9	23	23	4	12	845
5:45 PM	11	245	19	17	356	17	4	10	19	11	3	12	724

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			

TOTAL VOLUMES :	NL 129	NT 4158	NR 222	SL 253	ST 4531	SR 191	EL 83	ET 107	ER 158	WL 188	WT 37	WR 133	TOTAL 10190
APPROACH %'s :	2.86%	92.22%	4.92%	5.09%	91.08%	3.84%	23.85%	30.75%	45.40%	52.51%	10.34%	37.15%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	39	1512	93	78	1579	65	31	29	42	57	11	50	3586
PEAK HR FACTOR :	0.917			0.918			0.879			0.797			0.971

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

AM													
NS/EW Streets:	Pillani Hwy			Pillani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	1	1	2	1	0.5	0.5	1	0.5	0.5	1	
6:00 AM	0	2	0	0	5	1	0	1	1	1	0	0	11
6:15 AM	0	6	0	1	6	1	0	0	1	0	0	0	15
6:30 AM	0	1	1	3	13	1	1	0	0	0	0	2	22
6:45 AM	1	12	0	0	9	0	0	0	0	2	0	0	24
7:00 AM	2	2	1	1	8	0	1	0	1	1	0	0	17
7:15 AM	0	2	0	0	15	0	1	0	2	0	0	0	20
7:30 AM	0	1	1	0	5	1	0	0	1	0	0	0	9
7:45 AM	0	7	0	0	9	0	0	1	1	0	0	2	20
8:00 AM	0	6	0	0	5	0	1	0	1	0	0	0	13
8:15 AM	1	9	0	0	13	0	0	0	1	0	0	0	24
8:30 AM	0	7	0	0	7	0	1	0	0	0	0	0	15
8:45 AM	0	6	0	0	11	1	0	0	0	0	0	0	18
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	5.88%	89.71%	4.41%	4.31%	91.38%	4.31%	31.25%	12.50%	56.25%	50.00%	0.00%	50.00%	208
PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	0	16	1	0	34	1	2	1	5	0	0	2	62
PEAK HR FACTOR :	0.607			0.583			0.667			0.250			0.932

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-002

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	Piliani Hwy			Piliani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0.5	ET 0.5	ER 1	WL 0.5	WT 0.5	WR 1	TOTAL
3:00 PM	0	15	1	1	14	0	0	0	0	0	1	0	32
3:15 PM	1	7	0	0	16	0	0	0	0	0	0	2	26
3:30 PM	0	10	0	0	5	0	0	0	0	0	0	0	15
3:45 PM	0	8	1	0	10	0	0	0	0	0	0	0	19
4:00 PM	0	12	0	0	8	0	0	0	0	0	0	0	20
4:15 PM	0	5	0	0	7	0	0	1	0	0	0	1	14
4:30 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
4:45 PM	1	12	1	0	1	0	0	0	0	0	0	0	15
5:00 PM	0	1	0	1	7	0	0	0	0	0	0	0	9
5:15 PM	0	4	0	0	3	0	0	0	0	0	0	0	7
5:30 PM	0	6	0	0	2	0	0	0	0	0	0	0	8
5:45 PM	0	1	0	0	4	1	0	0	0	0	0	0	6

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 2	NT 85	NR 3	SL 2	ST 78	SR 1	EL 0	ET 1	ER 0	WL 0	WT 1	WR 3	TOTAL 176
APPROACH %'s :	2.22%	94.44%	3.33%	2.47%	96.30%	1.23%	0.00%	100.00%	0.00%	0.00%	25.00%	75.00%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	3:30 PM												
PEAK HR VOL :	0	35	1	0	30	0	0	1	0	0	0	1	TOTAL 68
PEAK HR FACTOR :	0.750			0.750			0.250			0.250			0.971

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

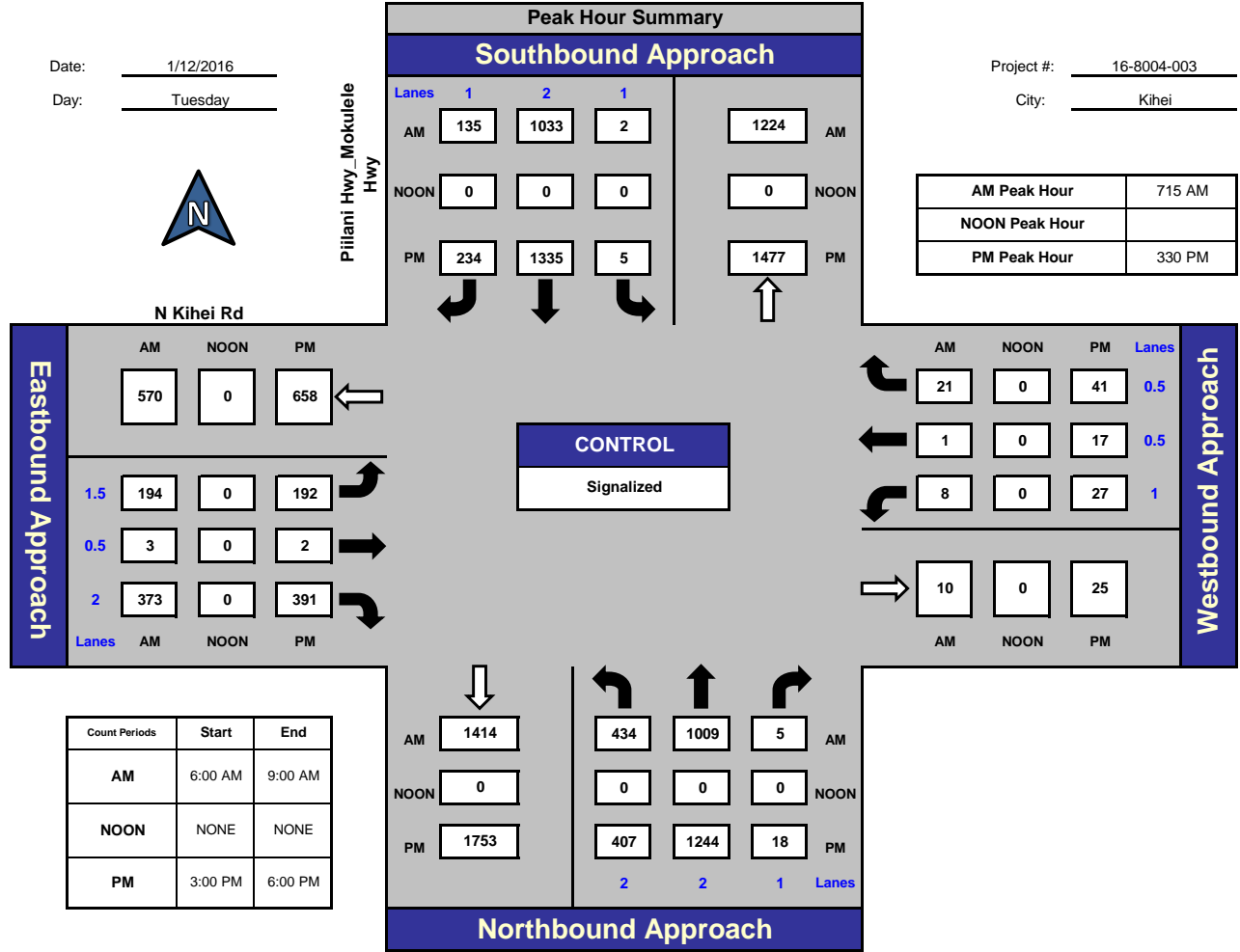
Piilani Hwy Mokulele Hwy and N Kihei Rd , Kihei

Date: 1/12/2016

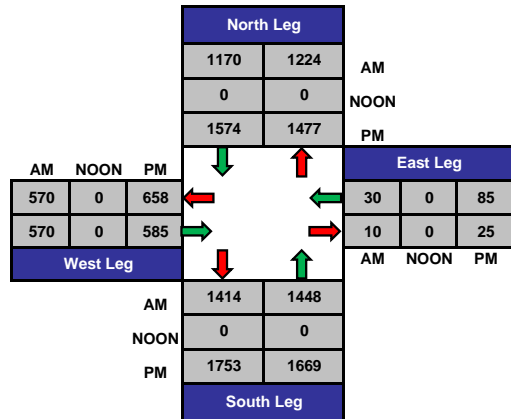
Day: Tuesday

Project #: 16-8004-003

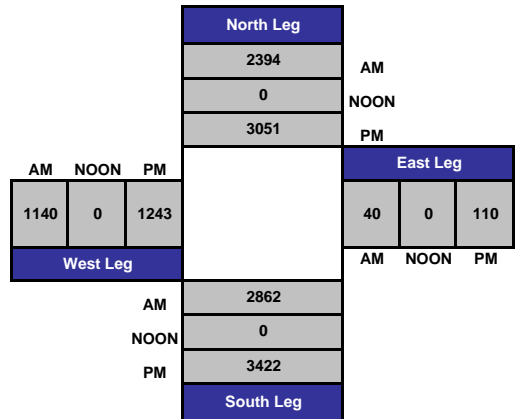
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Piihoni Hwy_Mokulele Hwy			Piihoni Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
6:00 AM	50	108	2	3	109	13	8	1	34	0	1	0	329
6:15 AM	66	124	8	14	138	10	36	0	44	6	0	0	446
6:30 AM	100	191	11	21	188	19	38	0	52	6	2	4	632
6:45 AM	91	216	8	12	172	27	37	10	43	3	0	3	622
7:00 AM	105	234	2	0	227	19	44	1	50	1	0	1	684
7:15 AM	115	299	3	0	241	39	50	2	95	4	1	13	862
7:30 AM	110	269	1	1	249	26	59	1	98	1	0	4	819
7:45 AM	107	228	0	1	300	42	42	0	91	1	0	4	816
8:00 AM	102	213	1	0	243	28	43	0	89	2	0	0	721
8:15 AM	76	208	3	3	269	28	32	0	80	0	1	0	700
8:30 AM	77	253	0	0	235	25	36	1	92	1	1	1	722
8:45 AM	62	196	0	2	230	23	44	0	95	2	0	1	655

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1061	2539	39	57	2601	299	469	16	863	27	6	31	8008
APPROACH %'s :	29.16%	69.77%	1.07%	1.93%	87.96%	10.11%	34.79%	1.19%	64.02%	42.19%	9.38%	48.44%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	434	1009	5	2	1033	135	194	3	373	8	1	21	3218
PEAK HR FACTOR :	0.868			0.853			0.902			0.417			0.933

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

PM

NS/EW Streets:	PM												TOTAL
	Pillani Hwy_Mokulele Hwy			Pillani Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
3:00 PM	104	275	4	3	313	59	59	1	83	7	0	1	909
3:15 PM	96	313	4	17	306	44	46	1	89	1	0	1	918
3:30 PM	104	337	9	3	343	50	47	0	79	15	8	31	1026
3:45 PM	95	286	3	1	353	67	51	0	112	5	2	7	982
4:00 PM	92	289	5	1	345	60	51	2	92	4	6	3	950
4:15 PM	116	332	1	0	294	57	43	0	108	3	1	0	955
4:30 PM	110	302	2	0	289	56	47	0	91	0	0	3	900
4:45 PM	86	247	1	0	333	61	27	0	104	0	0	1	860
5:00 PM	92	236	0	0	312	35	39	0	112	0	1	0	827
5:15 PM	103	241	1	2	330	61	39	0	102	0	1	0	880
5:30 PM	90	233	0	0	323	44	30	0	100	1	0	0	821
5:45 PM	80	188	0	0	289	50	31	0	103	0	0	0	741

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1168	3279	30	27	3830	644	510	4	1175	36	19	47	10769
APPROACH %'s :	26.09%	73.24%	0.67%	0.60%	85.09%	14.31%	30.20%	0.24%	69.57%	35.29%	18.63%	46.08%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	407	1244	18	5	1335	234	192	2	391	27	17	41	3913
PEAK HR FACTOR :	0.927			0.935			0.897			0.394			0.953

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Piihoni Hwy_Mokulele Hwy		Piihoni Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
6:00 AM	49	106	2	3	103	12	8	1	34	0	1	0	319
6:15 AM	66	119	8	14	131	10	36	0	44	6	0	0	434
6:30 AM	99	187	11	21	171	18	38	0	51	6	2	4	608
6:45 AM	91	205	8	12	167	25	36	10	41	3	0	3	601
7:00 AM	104	230	2	0	217	17	43	1	50	1	0	1	666
7:15 AM	115	297	3	0	229	37	47	2	93	4	1	6	834
7:30 AM	110	267	1	1	242	25	59	1	98	1	0	3	808
7:45 AM	105	223	0	1	292	40	42	0	90	1	0	4	798
8:00 AM	102	206	1	0	238	27	42	0	88	2	0	0	706
8:15 AM	75	201	2	2	257	27	31	0	80	0	1	0	676
8:30 AM	76	248	0	0	227	22	34	1	91	1	1	1	702
8:45 AM	61	190	0	2	221	20	43	0	94	1	0	1	633

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1053	2479	38	56	2495	280	459	16	854	26	6	23	7785
APPROACH %'s :	29.50%	69.44%	1.06%	1.98%	88.13%	9.89%	34.54%	1.20%	64.26%	47.27%	10.91%	41.82%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	432	993	5	2	1001	129	190	3	369	8	1	13	3146
PEAK HR FACTOR :	0.861			0.850			0.889			0.500			0.943

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Pillani Hwy_Mokulele Hwy		Pillani Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
3:00 PM	102	261	4	3	301	59	56	1	82	5	0	1	875
3:15 PM	94	308	4	8	296	44	44	1	85	1	0	1	886
3:30 PM	103	326	9	3	339	49	45	0	77	15	7	30	1003
3:45 PM	95	279	3	1	346	65	50	0	110	5	2	7	963
4:00 PM	91	276	5	1	337	60	47	2	91	4	6	3	923
4:15 PM	115	328	1	0	291	56	42	0	106	3	1	0	943
4:30 PM	109	297	2	0	288	56	47	0	91	0	0	3	893
4:45 PM	84	239	1	0	333	60	27	0	102	0	0	1	847
5:00 PM	91	234	0	0	309	34	36	0	108	0	1	0	813
5:15 PM	103	238	1	2	328	61	39	0	101	0	1	0	874
5:30 PM	88	229	0	0	321	43	30	0	100	1	0	0	812
5:45 PM	80	186	0	0	283	49	31	0	101	0	0	0	730

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1155	3201	30	18	3772	636	494	4	1154	34	18	46	10562
APPROACH %'s :	26.33%	72.98%	0.68%	0.41%	85.22%	14.37%	29.90%	0.24%	69.85%	34.69%	18.37%	46.94%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	3:30 PM												TOTAL
PEAK HR VOL :	404	1209	18	5	1313	230	184	2	384	27	16	40	3832
PEAK HR FACTOR :	0.918			0.939			0.891			0.399			0.955

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

AM													
NS/EW Streets:	Piihoni Hwy_Mokulele Hwy			Piihoni Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM	1	2	0	0	6	1	0	0	0	0	0	0	10
6:15 AM	0	5	0	0	7	0	0	0	0	0	0	0	12
6:30 AM	1	4	0	0	17	1	0	0	1	0	0	0	24
6:45 AM	0	11	0	0	5	2	1	0	2	0	0	0	21
7:00 AM	1	4	0	0	10	2	1	0	0	0	0	0	18
7:15 AM	0	2	0	0	12	2	3	0	2	0	0	7	28
7:30 AM	0	2	0	0	7	1	0	0	0	0	0	1	11
7:45 AM	2	5	0	0	8	2	0	0	1	0	0	0	18
8:00 AM	0	7	0	0	5	1	1	0	1	0	0	0	15
8:15 AM	1	7	1	1	12	1	1	0	0	0	0	0	24
8:30 AM	1	5	0	0	8	3	2	0	1	0	0	0	20
8:45 AM	1	6	0	0	9	3	1	0	1	1	0	0	22
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	8	60	1	1	106	19	10	0	9	1	0	8	223
	11.59%	86.96%	1.45%	0.79%	84.13%	15.08%	52.63%	0.00%	47.37%	11.11%	0.00%	88.89%	
PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	2	16	0	0	32	6	4	0	4	0	0	8	72
PEAK HR FACTOR :	0.643			0.679			0.400			0.286			0.943

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-003

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Pillani Hwy_Mokulele Hwy			Pillani Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	2	14	0	0	12	0	3	0	1	2	0	0	34
3:15 PM	2	5	0	9	10	0	2	0	4	0	0	0	32
3:30 PM	1	11	0	0	4	1	2	0	2	0	1	1	23
3:45 PM	0	7	0	0	7	2	1	0	2	0	0	0	19
4:00 PM	1	13	0	0	8	0	4	0	1	0	0	0	27
4:15 PM	1	4	0	0	3	1	1	0	2	0	0	0	12
4:30 PM	1	5	0	0	1	0	0	0	0	0	0	0	7
4:45 PM	2	8	0	0	0	1	0	0	2	0	0	0	13
5:00 PM	1	2	0	0	3	1	3	0	4	0	0	0	14
5:15 PM	0	3	0	0	2	0	0	0	1	0	0	0	6
5:30 PM	2	4	0	0	2	1	0	0	0	0	0	0	9
5:45 PM	0	2	0	0	6	1	0	0	2	0	0	0	11

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	13	78	0	9	58	8	16	0	21	2	1	1	207
APPROACH %'s :	14.29%	85.71%	0.00%	12.00%	77.33%	10.67%	43.24%	0.00%	56.76%	50.00%	25.00%	25.00%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	3	35	0	0	22	4	8	0	7	0	1	1	81
PEAK HR FACTOR :	0.679			0.722			0.750			0.250			0.955

CONTROL : Signalized

ITM Peak Hour Summary

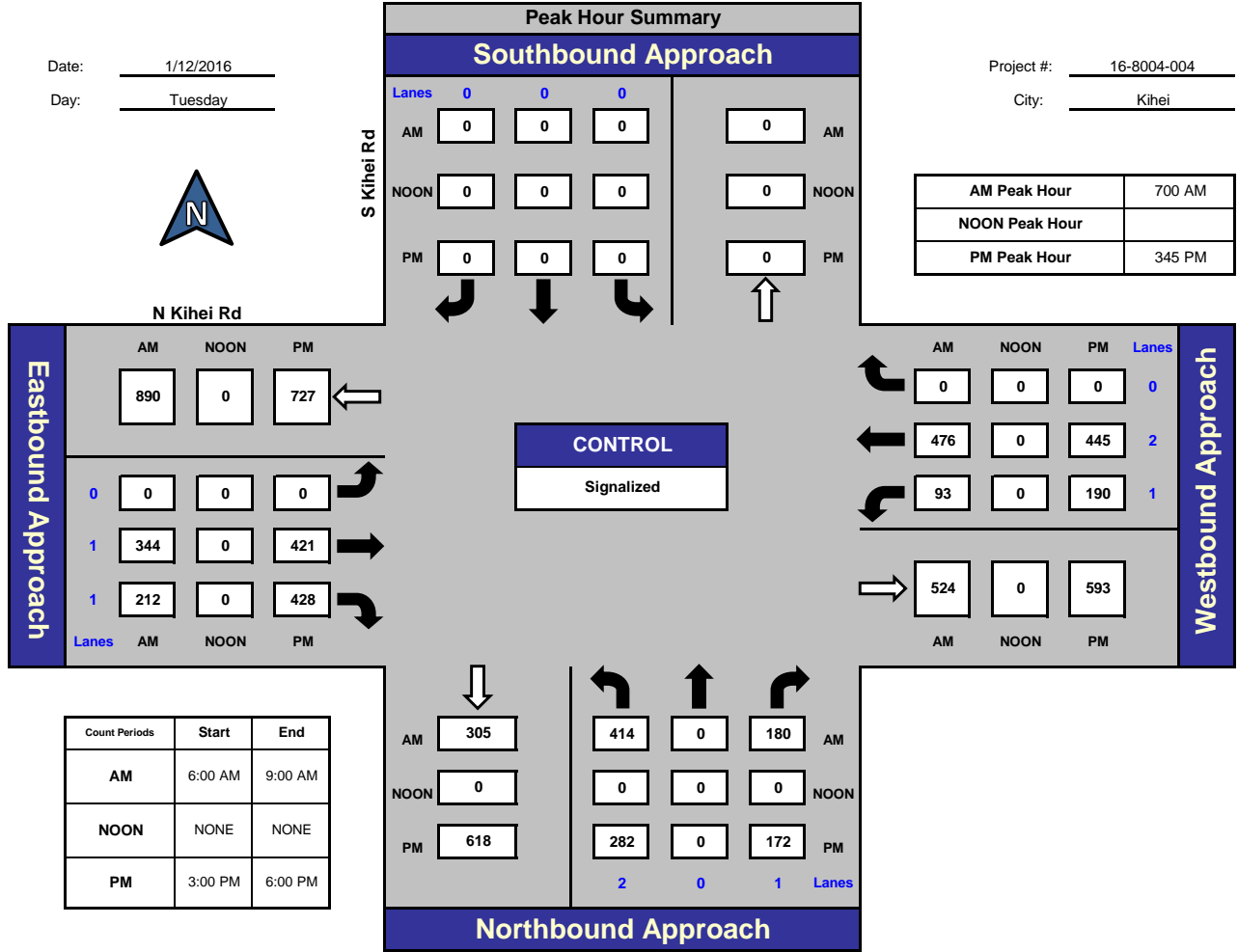


Prepared by:
National Data & Surveying Services

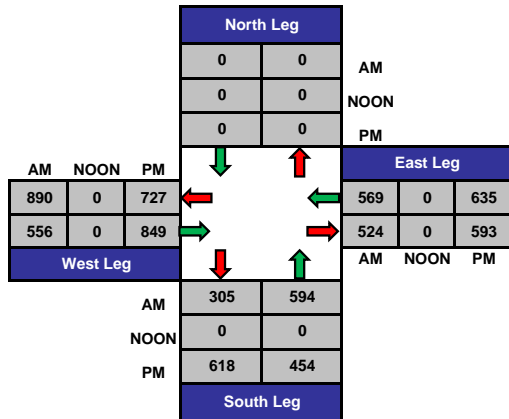
S Kihei Rd and N Kihei Rd, Kihei

Date: 1/12/2016
Day: Tuesday

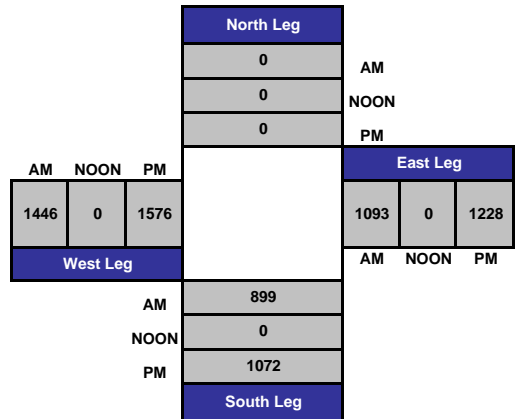
Project #: 16-8004-004
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-004

TOTALS

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM

NS/EW Streets:	S Kihei Rd		S Kihei Rd			N Kihei Rd			N Kihei Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	2	0	1	0	0	0	0	1	1	1	2	0	
3:00 PM	72	0	45	0	0	0	0	91	89	48	107	0	452
3:15 PM	65	0	39	0	0	0	0	102	101	36	107	0	450
3:30 PM	67	0	42	0	0	0	0	82	90	38	131	0	450
3:45 PM	66	0	44	0	0	0	0	116	119	43	110	0	498
4:00 PM	74	0	47	0	0	0	0	103	91	51	112	0	478
4:15 PM	64	0	40	0	0	0	0	104	109	53	115	0	485
4:30 PM	78	0	41	0	0	0	0	98	109	43	108	0	477
4:45 PM	61	0	21	0	0	0	0	106	123	68	99	0	478
5:00 PM	69	0	42	0	0	0	0	116	123	27	90	0	467
5:15 PM	76	0	29	0	0	0	0	119	111	52	110	0	497
5:30 PM	60	0	32	0	0	0	0	104	112	36	99	0	443
5:45 PM	54	0	26	0	0	0	0	102	94	48	91	0	415

UTURNS			
NB	SB	EB	WB
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			1
			0

TOTAL VOLUMES :	NL 806	NT 0	NR 448	SL 0	ST 0	SR 0	EL 0	ET 1243	ER 1271	WL 543	WT 1279	WR 0	TOTAL 5590
APPROACH %'s :	64.27%	0.00%	35.73%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	49.44%	50.56%	29.80%	70.20%	0.00%	

NB	SB	EB	WB
0	0	0	1

PEAK HR START TIME :	345 PM												
PEAK HR VOL :	282	0	172	0	0	0	0	421	428	190	445	0	TOTAL 1938
PEAK HR FACTOR :	0.938			0.000			0.903			0.945			0.973

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-004

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	S Kihei Rd		S Kihei Rd			N Kihei Rd			N Kihei Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	2	0	1	0	0	0	0	1	1	1	2	0	
3:00 PM	70	0	44	0	0	0	0	88	87	48	104	0	441
3:15 PM	63	0	38	0	0	0	0	97	101	36	106	0	441
3:30 PM	65	0	41	0	0	0	0	78	88	37	130	0	439
3:45 PM	65	0	43	0	0	0	0	114	119	42	109	0	492
4:00 PM	71	0	43	0	0	0	0	101	90	51	111	0	467
4:15 PM	64	0	39	0	0	0	0	101	109	53	113	0	479
4:30 PM	77	0	41	0	0	0	0	98	109	43	106	0	474
4:45 PM	61	0	21	0	0	0	0	104	123	67	97	0	473
5:00 PM	69	0	39	0	0	0	0	113	122	27	88	0	458
5:15 PM	75	0	29	0	0	0	0	118	110	52	110	0	494
5:30 PM	59	0	32	0	0	0	0	104	111	36	98	0	440
5:45 PM	54	0	26	0	0	0	0	101	93	47	90	0	411

UTURNS			
NB	SB	EB	WB

			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			1
			0

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	793	0	436	0	0	0	0	1217	1262	539	1262	0	5509
	64.52%	0.00%	35.48%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	49.09%	50.91%	29.93%	70.07%	0.00%	

NB	SB	EB	WB
0	0	0	1

PEAK HR START TIME :	345 PM												
PEAK HR VOL :	277	0	166	0	0	0	0	414	427	189	439	0	1912
PEAK HR FACTOR :	0.939			0.000			0.902			0.946			0.972

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-004

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	S Kihei Rd			S Kihei Rd			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM	1	0	0	0	0	0	0	0	3	0	1	0	5
6:15 AM	1	0	0	0	0	0	0	1	0	0	0	0	2
6:30 AM	3	0	0	0	0	0	0	1	0	1	1	0	6
6:45 AM	0	0	1	0	0	0	0	1	0	2	0	0	4
7:00 AM	1	0	1	0	0	0	0	3	1	1	2	0	9
7:15 AM	2	0	0	0	0	0	0	2	1	0	2	0	7
7:30 AM	1	0	0	0	0	0	0	0	2	1	0	0	4
7:45 AM	0	0	0	0	0	0	0	2	0	1	2	0	5
8:00 AM	1	0	1	0	0	0	0	0	0	0	2	0	4
8:15 AM	0	0	1	0	0	0	0	0	1	0	2	0	4
8:30 AM	1	0	1	0	0	0	0	3	1	2	4	0	12
8:45 AM	1	0	1	0	0	0	0	2	2	3	1	0	10

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	66.67%	0.00%	33.33%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	57.69%	42.31%	39.29%	60.71%	0.00%	72

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	4	0	1	0	0	0	0	7	4	3	6	0	25
PEAK HR FACTOR :	0.625			0.000			0.688			0.750			0.956

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-004

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	S Kihei Rd			S Kihei Rd			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
3:00 PM	2	0	1	0	0	0	0	3	2	0	3	0	11
3:15 PM	2	0	1	0	0	0	0	5	0	0	1	0	9
3:30 PM	2	0	1	0	0	0	0	4	2	1	1	0	11
3:45 PM	1	0	1	0	0	0	0	2	0	1	1	0	6
4:00 PM	3	0	4	0	0	0	0	2	1	0	1	0	11
4:15 PM	0	0	1	0	0	0	0	3	0	0	2	0	6
4:30 PM	1	0	0	0	0	0	0	0	0	0	2	0	3
4:45 PM	0	0	0	0	0	0	0	2	0	1	2	0	5
5:00 PM	0	0	3	0	0	0	0	3	1	0	2	0	9
5:15 PM	1	0	0	0	0	0	0	1	1	0	0	0	3
5:30 PM	1	0	0	0	0	0	0	0	1	0	1	0	3
5:45 PM	0	0	0	0	0	0	0	1	1	1	1	0	4

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	52.00%	0.00%	48.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	74.29%	25.71%	19.05%	80.95%	0.00%	81

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	345 PM												TOTAL
PEAK HR VOL :	5	0	6	0	0	0	0	7	1	1	6	0	26
PEAK HR FACTOR :	0.393			0.000			0.667			0.875			0.972

CONTROL : Signalized

ITM Peak Hour Summary

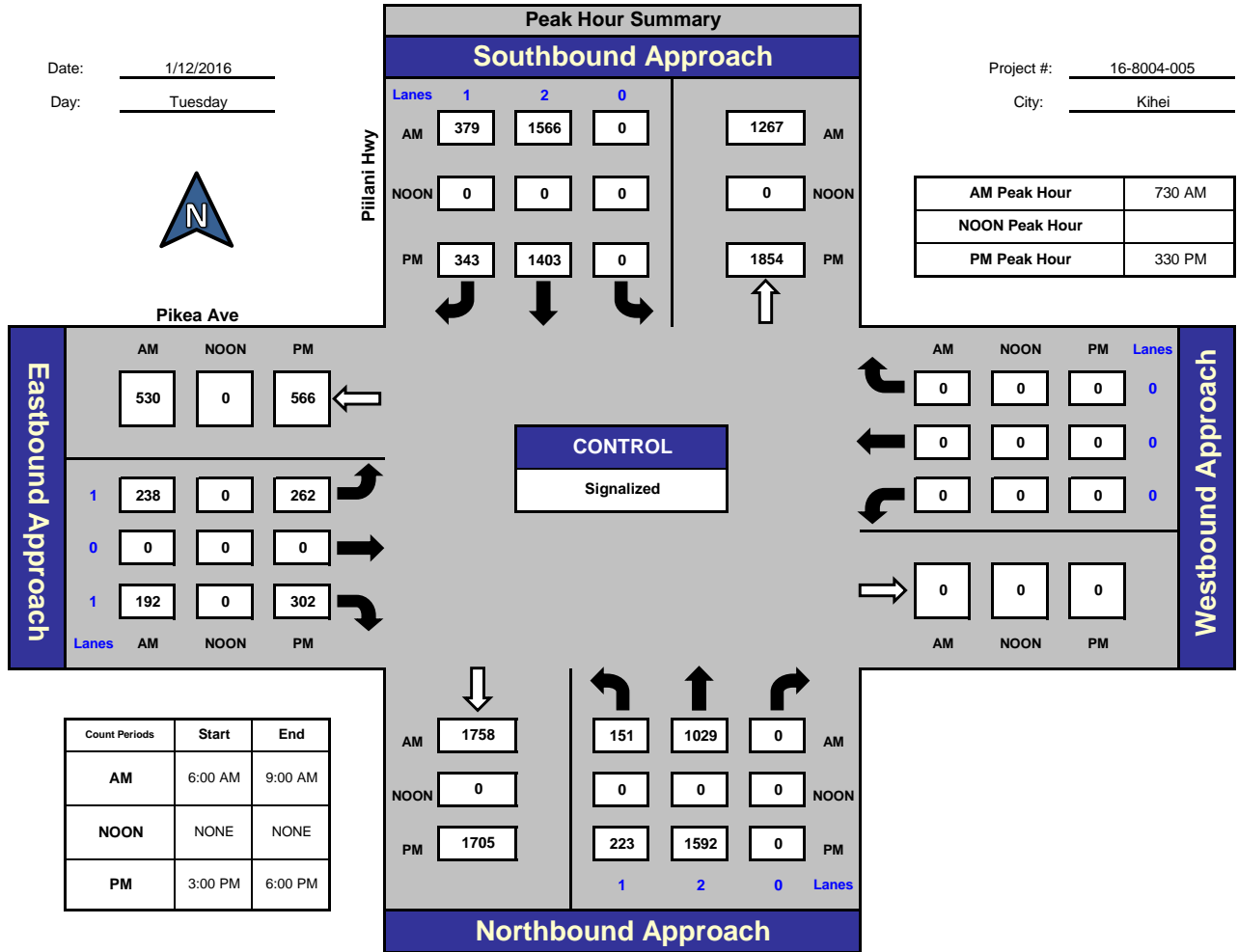


Prepared by:
National Data & Surveying Services

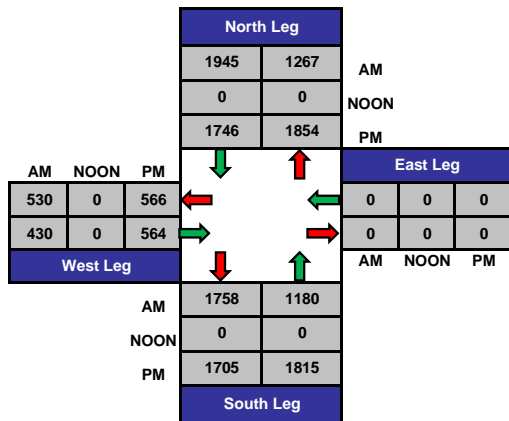
Piilani Hwy and Pikea Ave, Kihei

Date: 1/12/2016
Day: Tuesday

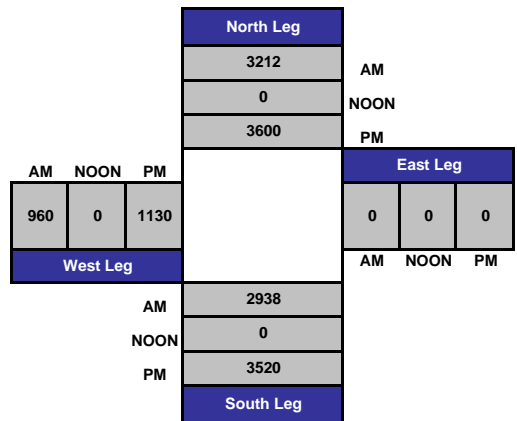
Project #: 16-8004-005
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Pikea Ave			Pikea Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
6:00 AM	4	100	0	0	116	31	23	0	18	0	0	0	292
6:15 AM	12	136	0	0	165	46	30	0	17	0	0	0	406
6:30 AM	10	194	0	0	280	45	35	0	32	0	0	0	596
6:45 AM	14	197	0	0	269	60	47	0	38	0	0	0	625
7:00 AM	16	247	0	0	333	60	33	0	50	0	0	0	739
7:15 AM	21	277	0	0	366	62	48	0	39	0	0	0	813
7:30 AM	30	267	0	0	407	104	61	0	37	0	0	0	906
7:45 AM	37	246	0	0	452	94	76	0	45	0	0	0	950
8:00 AM	44	267	0	0	343	95	53	0	50	0	0	0	852
8:15 AM	40	249	0	0	364	86	48	0	60	0	0	0	847
8:30 AM	42	241	0	0	346	62	52	0	44	0	0	0	787
8:45 AM	39	210	0	0	301	82	56	0	47	0	0	0	735

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 309	NT 2631	NR 0	SL 0	ST 3742	SR 827	EL 562	ET 0	ER 477	WL 0	WT 0	WR 0	TOTAL 8548
APPROACH %'s :	10.51%	89.49%	0.00%	0.00%	81.90%	18.10%	54.09%	0.00%	45.91%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	730 AM												
PEAK HR VOL :	151	1029	0	0	1566	379	238	0	192	0	0	0	TOTAL 3555
PEAK HR FACTOR :	0.949			0.891			0.888			0.000			0.936

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Piliani Hwy			Piliani Hwy			Pikea Ave			Pikea Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
3:00 PM	46	385	0	0	348	91	72	0	50	0	0	0	992
3:15 PM	52	421	0	0	348	81	75	0	58	0	0	0	1035
3:30 PM	54	423	0	0	334	83	64	0	79	0	0	0	1037
3:45 PM	55	351	0	0	382	91	53	0	72	0	0	0	1004
4:00 PM	56	392	0	0	347	95	74	0	76	0	0	0	1040
4:15 PM	58	426	0	0	340	74	71	0	75	0	0	0	1044
4:30 PM	66	395	0	0	328	103	70	0	61	0	0	0	1023
4:45 PM	66	352	0	0	331	108	67	0	68	0	0	0	992
5:00 PM	61	330	0	0	317	92	56	0	73	0	0	0	929
5:15 PM	58	302	0	0	333	90	68	0	78	0	0	0	929
5:30 PM	51	276	0	0	292	85	60	0	82	0	0	0	846
5:45 PM	51	234	0	0	283	76	61	0	57	0	0	0	762

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL 674	NT 4287	NR 0	SL 0	ST 3983	SR 1069	EL 791	ET 0	ER 829	WL 0	WT 0	WR 0	TOTAL 11633
APPROACH %'s :	13.59%	86.41%	0.00%	0.00%	78.84%	21.16%	48.83%	0.00%	51.17%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	223	1592	0	0	1403	343	262	0	302	0	0	0	4125
PEAK HR FACTOR :	0.938			0.923			0.940			0.000			0.988

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Pikea Ave			Pikea Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
6:00 AM	3	98	0	0	112	30	23	0	18	0	0	0	284
6:15 AM	12	128	0	0	157	45	30	0	16	0	0	0	388
6:30 AM	10	190	0	0	276	44	35	0	32	0	0	0	587
6:45 AM	14	191	0	0	257	59	45	0	38	0	0	0	604
7:00 AM	15	242	0	0	325	60	33	0	49	0	0	0	724
7:15 AM	21	276	0	0	352	60	47	0	38	0	0	0	794
7:30 AM	29	262	0	0	402	100	59	0	37	0	0	0	889
7:45 AM	37	244	0	0	445	91	74	0	45	0	0	0	936
8:00 AM	44	262	0	0	334	95	53	0	50	0	0	0	838
8:15 AM	39	239	0	0	356	82	48	0	58	0	0	0	822
8:30 AM	42	233	0	0	335	61	52	0	43	0	0	0	766
8:45 AM	39	202	0	0	290	79	55	0	45	0	0	0	710

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	305	2567	0	0	3641	806	554	0	469	0	0	0	8342
APPROACH %'s :	10.62%	89.38%	0.00%	0.00%	81.88%	18.12%	54.15%	0.00%	45.85%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	149	1007	0	0	1537	368	234	0	190	0	0	0	3485
PEAK HR FACTOR :	0.944			0.889			0.891			0.000			0.931

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Piliani Hwy		Piliani Hwy			Pikea Ave			Pikea Ave			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0		WR 0
LANES:													
3:00 PM	46	372	0	0	340	90	70	0	50	0	0	0	968
3:15 PM	52	410	0	0	333	81	75	0	58	0	0	0	1009
3:30 PM	54	419	0	0	327	82	63	0	79	0	0	0	1024
3:45 PM	54	345	0	0	376	90	52	0	72	0	0	0	989
4:00 PM	56	383	0	0	346	93	74	0	76	0	0	0	1028
4:15 PM	57	422	0	0	335	74	70	0	74	0	0	0	1032
4:30 PM	65	389	0	0	327	103	69	0	61	0	0	0	1014
4:45 PM	66	348	0	0	330	107	65	0	68	0	0	0	984
5:00 PM	61	329	0	0	313	91	55	0	73	0	0	0	922
5:15 PM	58	297	0	0	332	90	67	0	77	0	0	0	921
5:30 PM	51	272	0	0	291	85	60	0	82	0	0	0	841
5:45 PM	51	231	0	0	278	74	61	0	57	0	0	0	752

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	671	4217	0	0	3928	1060	781	0	827	0	0	0	11484
APPROACH %'s :	13.73%	86.27%	0.00%	0.00%	78.75%	21.25%	48.57%	0.00%	51.43%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	221	1569	0	0	1384	339	259	0	301	0	0	0	4073
PEAK HR FACTOR :	0.934			0.924			0.933			0.000			0.987

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Pikea Ave			Pikea Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	1	2	0	0	4	1	0	0	0	0	0	0	8
6:15 AM	0	8	0	0	8	1	0	0	1	0	0	0	18
6:30 AM	0	4	0	0	4	1	0	0	0	0	0	0	9
6:45 AM	0	6	0	0	12	1	2	0	0	0	0	0	21
7:00 AM	1	5	0	0	8	0	0	0	1	0	0	0	15
7:15 AM	0	1	0	0	14	2	1	0	1	0	0	0	19
7:30 AM	1	5	0	0	5	4	2	0	0	0	0	0	17
7:45 AM	0	2	0	0	7	3	2	0	0	0	0	0	14
8:00 AM	0	5	0	0	9	0	0	0	0	0	0	0	14
8:15 AM	1	10	0	0	8	4	0	0	2	0	0	0	25
8:30 AM	0	8	0	0	11	1	0	0	1	0	0	0	21
8:45 AM	0	8	0	0	11	3	1	0	2	0	0	0	25

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	5.88%	94.12%	0.00%	0.00%	82.79%	17.21%	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	206

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:30 AM												TOTAL
PEAK HR VOL :	2	22	0	0	29	11	4	0	2	0	0	0	70
PEAK HR FACTOR :	0.545			0.833			0.750			0.000			0.931

CONTROL : Signalized

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-005

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													TOTAL
Piliani Hwy			Piliani Hwy			Pikea Ave			Pikea Ave				
NS/EW Streets:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	13	0	0	8	1	2	0	0	0	0	0	24
3:15 PM	0	11	0	0	15	0	0	0	0	0	0	0	26
3:30 PM	0	4	0	0	7	1	1	0	0	0	0	0	13
3:45 PM	1	6	0	0	6	1	1	0	0	0	0	0	15
4:00 PM	0	9	0	0	1	2	0	0	0	0	0	0	12
4:15 PM	1	4	0	0	5	0	1	0	1	0	0	0	12
4:30 PM	1	6	0	0	1	0	1	0	0	0	0	0	9
4:45 PM	0	4	0	0	1	1	2	0	0	0	0	0	8
5:00 PM	0	1	0	0	4	1	1	0	0	0	0	0	7
5:15 PM	0	5	0	0	1	0	1	0	1	0	0	0	8
5:30 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	3	0	0	5	2	0	0	0	0	0	0	10

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	70	0	0	55	9	10	0	2	0	0	0	149
APPROACH %'s :	4.11%	95.89%	0.00%	0.00%	85.94%	14.06%	83.33%	0.00%	16.67%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	330 PM												TOTAL
PEAK HR VOL :	2	23	0	0	19	4	3	0	1	0	0	0	52
PEAK HR FACTOR :	0.694			0.719			0.500			0.000			0.987

CONTROL : Signalized

ITM Peak Hour Summary

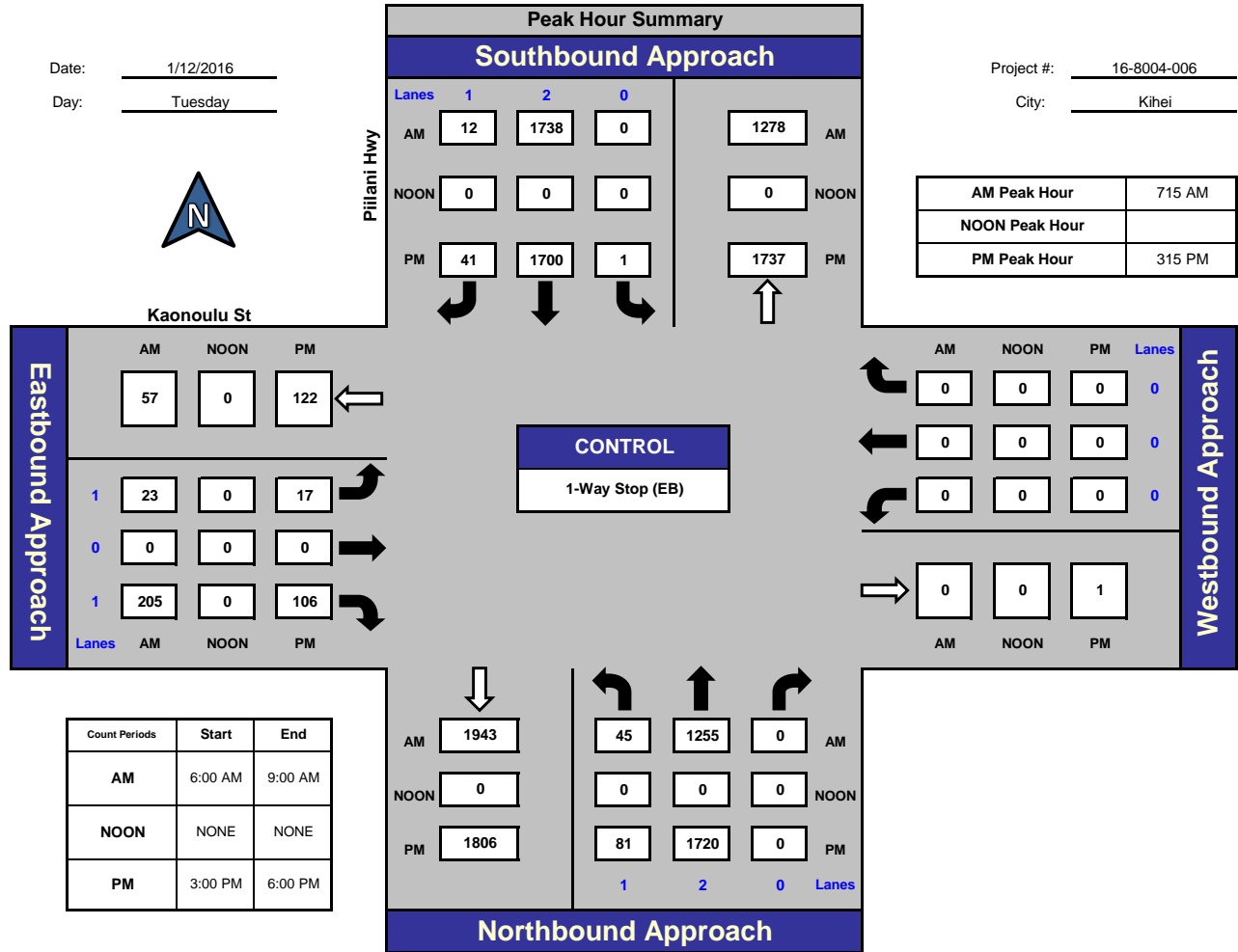


Prepared by:
National Data & Surveying Services

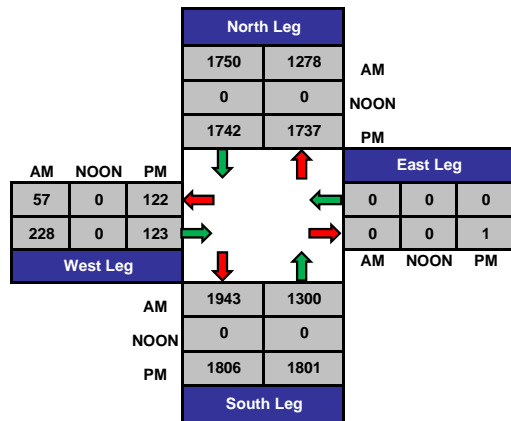
Piilani Hwy and Kaonoulu St., Kihei

Date: 1/12/2016
Day: Tuesday

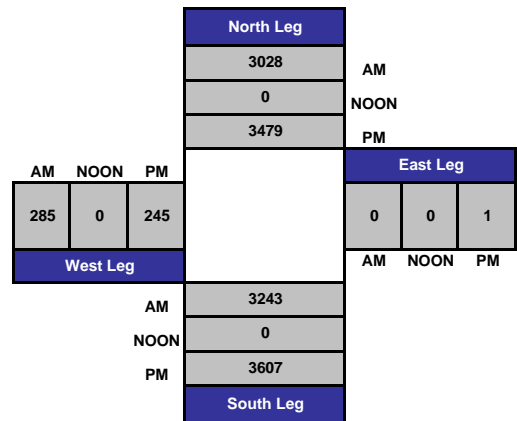
Project #: 16-8004-006
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	2	0	0	2	1	1	0	1	0	0	0	
6:00 AM	1	123	0	0	140	1	4	0	10	0	0	0	279
6:15 AM	7	165	0	0	200	4	6	0	15	0	0	0	397
6:30 AM	7	213	0	0	314	3	14	0	30	0	0	0	581
6:45 AM	12	242	0	0	273	1	11	0	28	0	0	0	567
7:00 AM	9	284	0	0	357	3	6	0	38	0	0	0	697
7:15 AM	14	312	0	0	386	5	8	0	48	0	0	0	773
7:30 AM	9	318	0	0	476	3	5	0	56	0	0	0	867
7:45 AM	13	322	0	0	463	0	6	0	57	0	0	0	861
8:00 AM	9	303	0	0	413	4	4	0	44	0	0	0	777
8:15 AM	15	280	0	0	372	4	6	0	35	0	0	0	712
8:30 AM	13	284	0	0	374	7	10	0	28	0	0	0	716
8:45 AM	10	256	0	0	343	6	3	0	26	0	0	0	644

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	119	3102	0	0	4111	41	83	0	415	0	0	0	7871
APPROACH %'s :	3.69%	96.31%	0.00%	0.00%	99.01%	0.99%	16.67%	0.00%	83.33%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	45	1255	0	0	1738	12	23	0	205	0	0	0	3278
PEAK HR FACTOR :	0.970			0.913			0.905			0.000			0.945

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Piliani Hwy			Piliani Hwy			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
3:00 PM	26	397	0	0	373	7	7	0	16	0	0	0	826
3:15 PM	20	458	0	0	427	10	4	0	36	0	0	0	955
3:30 PM	21	468	0	1	381	9	5	0	21	0	0	0	906
3:45 PM	15	394	0	0	465	11	3	0	22	0	0	0	910
4:00 PM	25	400	0	0	427	11	5	0	27	0	0	0	895
4:15 PM	18	438	0	0	395	5	3	0	23	0	0	0	882
4:30 PM	30	441	0	0	430	12	4	0	28	0	0	0	945
4:45 PM	30	368	0	0	387	11	3	0	33	0	0	0	832
5:00 PM	40	317	0	0	441	15	2	0	17	0	0	0	832
5:15 PM	23	338	0	0	400	9	2	0	28	0	0	0	800
5:30 PM	33	287	0	0	396	18	5	0	27	0	0	0	766
5:45 PM	20	273	0	0	326	14	3	0	26	0	0	0	662

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	301	4579	0	1	4848	132	46	0	304	0	0	0	10211
APPROACH %'s :	6.17%	93.83%	0.00%	0.02%	97.33%	2.65%	13.14%	0.00%	86.86%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	1	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	81	1720	0	1	1700	41	17	0	106	0	0	0	3666
PEAK HR FACTOR :	0.921			0.915			0.769			0.000			0.960

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Pillani Hwy		Pillani Hwy			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	2	0	0	2	1	1	0	1	0	0	0	
6:00 AM	1	121	0	0	133	1	4	0	10	0	0	0	270
6:15 AM	7	158	0	0	193	4	6	0	15	0	0	0	383
6:30 AM	7	208	0	0	303	3	14	0	30	0	0	0	565
6:45 AM	12	236	0	0	263	1	11	0	27	0	0	0	550
7:00 AM	9	278	0	0	346	3	6	0	38	0	0	0	680
7:15 AM	14	307	0	0	374	5	8	0	47	0	0	0	755
7:30 AM	8	311	0	0	468	3	5	0	53	0	0	0	848
7:45 AM	13	316	0	0	454	0	6	0	57	0	0	0	846
8:00 AM	9	298	0	0	404	4	4	0	44	0	0	0	763
8:15 AM	15	273	0	0	363	4	5	0	34	0	0	0	694
8:30 AM	13	277	0	0	363	7	9	0	28	0	0	0	697
8:45 AM	10	248	0	0	332	6	3	0	25	0	0	0	624

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	118	3031	0	0	3996	41	81	0	408	0	0	0	7675
APPROACH %'s :	3.75%	96.25%	0.00%	0.00%	98.98%	1.02%	16.56%	0.00%	83.44%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	44	1232	0	0	1700	12	23	0	201	0	0	0	3212
PEAK HR FACTOR :	0.970			0.909			0.889			0.000			0.947

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Piliani Hwy		Piliani Hwy			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	2	0	0	2	1	1	0	1	0	0	0	
3:00 PM	26	379	0	0	364	7	7	0	16	0	0	0	799
3:15 PM	20	448	0	0	411	10	4	0	36	0	0	0	929
3:30 PM	21	461	0	1	373	9	5	0	21	0	0	0	891
3:45 PM	15	388	0	0	458	11	3	0	22	0	0	0	897
4:00 PM	25	390	0	0	425	11	5	0	27	0	0	0	883
4:15 PM	18	435	0	0	389	5	3	0	23	0	0	0	873
4:30 PM	30	436	0	0	429	12	4	0	28	0	0	0	939
4:45 PM	30	358	0	0	386	11	3	0	33	0	0	0	821
5:00 PM	40	315	0	0	436	15	2	0	17	0	0	0	825
5:15 PM	23	332	0	0	399	9	2	0	28	0	0	0	793
5:30 PM	33	284	0	0	394	18	5	0	27	0	0	0	761
5:45 PM	20	271	0	0	318	14	3	0	26	0	0	0	652

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	301	4497	0	1	4782	132	46	0	304	0	0	0	10063
APPROACH %'s :	6.27%	93.73%	0.00%	0.02%	97.29%	2.69%	13.14%	0.00%	86.86%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	1	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	81	1687	0	1	1667	41	17	0	106	0	0	0	3600
PEAK HR FACTOR :	0.917			0.911			0.769			0.000			0.969

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

AM													
NS/EW Streets:	Pillani Hwy			Pillani Hwy			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	2	0	0	7	0	0	0	0	0	0	0	9
6:15 AM	0	7	0	0	7	0	0	0	0	0	0	0	14
6:30 AM	0	5	0	0	11	0	0	0	0	0	0	0	16
6:45 AM	0	6	0	0	10	0	0	0	1	0	0	0	17
7:00 AM	0	6	0	0	11	0	0	0	0	0	0	0	17
7:15 AM	0	5	0	0	12	0	0	0	1	0	0	0	18
7:30 AM	1	7	0	0	8	0	0	0	3	0	0	0	19
7:45 AM	0	6	0	0	9	0	0	0	0	0	0	0	15
8:00 AM	0	5	0	0	9	0	0	0	0	0	0	0	14
8:15 AM	0	7	0	0	9	0	1	0	1	0	0	0	18
8:30 AM	0	7	0	0	11	0	1	0	0	0	0	0	19
8:45 AM	0	8	0	0	11	0	0	0	1	0	0	0	20

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	1	71	0	0	115	0	2	0	7	0	0	0	196
	1.39%	98.61%	0.00%	0.00%	100.00%	0.00%	22.22%	0.00%	77.78%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	1	23	0	0	38	0	0	0	4	0	0	0	66
PEAK HR FACTOR :	0.750			0.792			0.333			0.000			0.947

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-006

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM

NS/EW Streets:	Piliani Hwy		Piliani Hwy			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	2	0	0	2	1	1	0	1	0	0	0	
3:00 PM	0	18	0	0	9	0	0	0	0	0	0	27	
3:15 PM	0	10	0	0	16	0	0	0	0	0	0	26	
3:30 PM	0	7	0	0	8	0	0	0	0	0	0	15	
3:45 PM	0	6	0	0	7	0	0	0	0	0	0	13	
4:00 PM	0	10	0	0	2	0	0	0	0	0	0	12	
4:15 PM	0	3	0	0	6	0	0	0	0	0	0	9	
4:30 PM	0	5	0	0	1	0	0	0	0	0	0	6	
4:45 PM	0	10	0	0	1	0	0	0	0	0	0	11	
5:00 PM	0	2	0	0	5	0	0	0	0	0	0	7	
5:15 PM	0	6	0	0	1	0	0	0	0	0	0	7	
5:30 PM	0	3	0	0	2	0	0	0	0	0	0	5	
5:45 PM	0	2	0	0	8	0	0	0	0	0	0	10	

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	148

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	0	33	0	0	33	0	0	0	0	0	0	0	66
PEAK HR FACTOR :	0.825			0.516			0.000			0.000			0.969

CONTROL : 1-Way Stop (EB)

ITM Peak Hour Summary

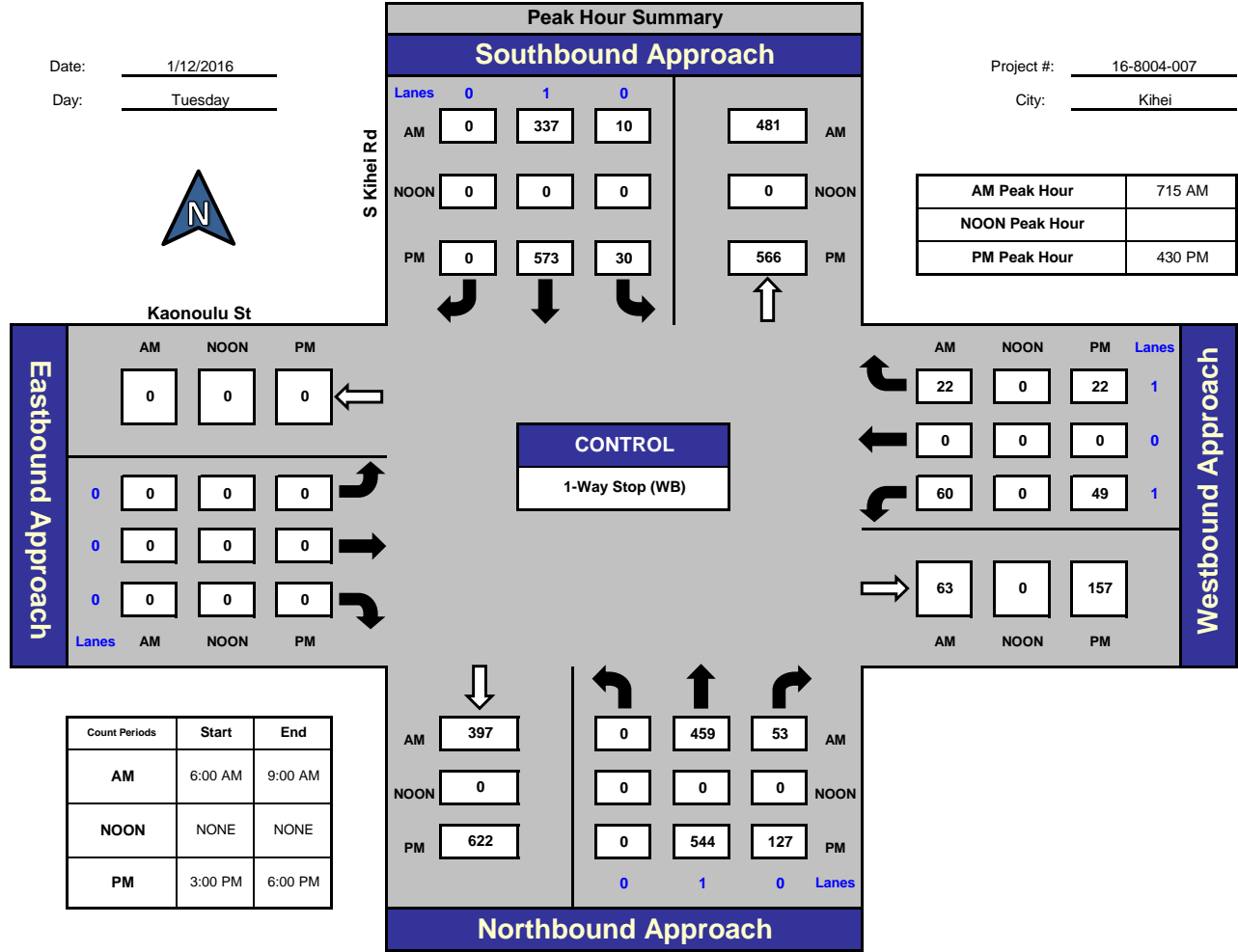


Prepared by:
National Data & Surveying Services

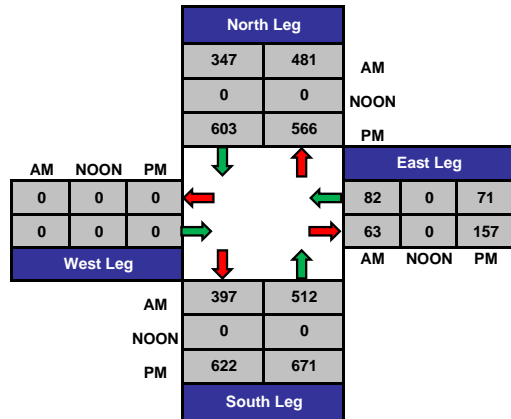
S Kihei Rd and Kaonoulu St, Kihei

Date: 1/12/2016
Day: Tuesday

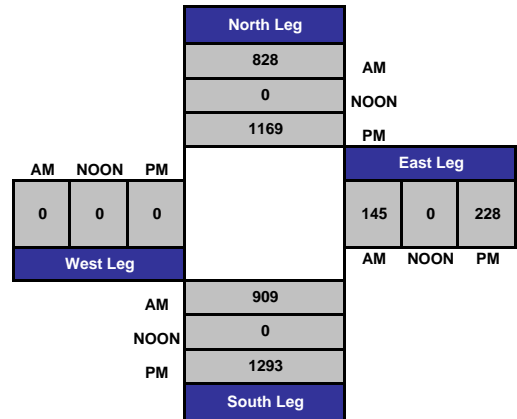
Project #: 16-8004-007
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	51	1	4	16	0	0	0	0	4	0	5	81
6:15 AM	0	72	2	1	32	0	0	0	0	2	0	6	115
6:30 AM	0	91	4	4	38	0	0	0	0	7	0	6	150
6:45 AM	0	112	7	2	47	0	0	0	0	9	0	13	190
7:00 AM	0	112	2	4	54	0	0	0	0	10	0	11	193
7:15 AM	0	130	9	5	71	0	0	0	0	16	0	5	236
7:30 AM	0	111	15	1	74	0	0	0	0	21	0	7	229
7:45 AM	0	122	13	4	102	0	0	0	0	11	0	4	256
8:00 AM	0	96	16	0	90	0	0	0	0	12	0	6	220
8:15 AM	0	110	16	1	87	0	0	0	0	14	0	6	234
8:30 AM	0	105	10	2	79	0	0	0	0	18	0	5	219
8:45 AM	0	101	11	3	87	0	0	0	0	18	0	2	222

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
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 VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	1213	106	31	777	0	0	0	0	142	0	76	2345
		91.96%	8.04%	3.84%	96.16%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	65.14%	0.00%	34.86%	

NB	SB	EB	WB
0	1	0	1

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	459	53	10	337	0	0	0	0	60	0	22	941
PEAK HR FACTOR :	0.921			0.818			0.000			0.732			0.919

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	130	34	11	129	0	0	0	0	12	0	8	324
3:15 PM	0	137	27	6	136	0	0	0	0	8	0	4	318
3:30 PM	0	133	20	7	109	0	0	0	0	16	0	2	287
3:45 PM	0	134	32	5	143	0	0	0	0	26	0	6	346
4:00 PM	0	139	20	6	134	0	0	0	0	16	0	9	324
4:15 PM	0	127	31	7	129	0	0	0	0	13	0	1	308
4:30 PM	0	152	26	3	143	0	0	0	0	8	0	6	338
4:45 PM	0	116	28	8	169	0	0	0	0	16	0	4	341
5:00 PM	0	137	35	8	138	0	0	0	0	12	0	8	338
5:15 PM	0	139	38	11	123	0	0	0	0	13	0	4	328
5:30 PM	0	118	26	12	124	0	0	0	0	14	0	6	300
5:45 PM	0	132	25	3	104	0	0	0	0	12	0	6	282

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	82.33%	17.67%	5.22%	94.78%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	72.17%	0.00%	27.83%	3834

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	544	127	30	573	0	0	0	0	49	0	22	1345
PEAK HR FACTOR :	0.942			0.852			0.000			0.888			0.986

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	S Kihei Rd		S Kihei Rd			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	49	1	4	15	0	0	0	0	4	0	5	78
6:15 AM	0	70	2	1	31	0	0	0	0	2	0	6	112
6:30 AM	0	89	2	3	38	0	0	0	0	7	0	6	145
6:45 AM	0	110	7	2	46	0	0	0	0	9	0	13	187
7:00 AM	0	110	2	4	54	0	0	0	0	10	0	11	191
7:15 AM	0	129	9	5	70	0	0	0	0	16	0	5	234
7:30 AM	0	109	15	1	74	0	0	0	0	20	0	7	226
7:45 AM	0	120	13	4	101	0	0	0	0	11	0	4	253
8:00 AM	0	95	16	0	88	0	0	0	0	12	0	6	217
8:15 AM	0	109	16	1	86	0	0	0	0	14	0	6	232
8:30 AM	0	102	10	2	77	0	0	0	0	18	0	5	214
8:45 AM	0	97	11	3	82	0	0	0	0	18	0	2	213

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
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 VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	91.96%	8.04%	3.79%	96.21%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	64.98%	0.00%	35.02%	2302

NB	SB	EB	WB
0	1	0	1

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	0	453	53	10	333	0	0	0	0	59	0	22	930
PEAK HR FACTOR :	0.917			0.817			0.000			0.750			0.919

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	126	34	11	128	0	0	0	0	12	0	8	319
3:15 PM	0	136	27	6	134	0	0	0	0	7	0	4	314
3:30 PM	0	130	20	7	109	0	0	0	0	16	0	2	284
3:45 PM	0	132	32	5	142	0	0	0	0	25	0	6	342
4:00 PM	0	135	19	6	132	0	0	0	0	16	0	8	316
4:15 PM	0	126	31	7	128	0	0	0	0	13	0	1	306
4:30 PM	0	151	26	3	143	0	0	0	0	8	0	6	337
4:45 PM	0	115	28	8	169	0	0	0	0	16	0	4	340
5:00 PM	0	136	34	8	137	0	0	0	0	12	0	8	335
5:15 PM	0	138	38	11	121	0	0	0	0	13	0	4	325
5:30 PM	0	117	26	12	123	0	0	0	0	14	0	6	298
5:45 PM	0	131	25	3	103	0	0	0	0	12	0	6	280

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	82.23%	17.77%	5.25%	94.75%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	72.25%	0.00%	27.75%	3796

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	540	126	30	570	0	0	0	0	49	0	22	1337
PEAK HR FACTOR :	0.941			0.847			0.000			0.888			0.983

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL	
	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
6:00 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	3
6:15 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	3
6:30 AM	0	2	2	1	0	0	0	0	0	0	0	0	0	5
6:45 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	3
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	2
7:30 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	3
7:45 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	3
8:00 AM	0	1	0	0	2	0	0	0	0	0	0	0	0	3
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	2
8:30 AM	0	3	0	0	2	0	0	0	0	0	0	0	0	5
8:45 AM	0	4	0	0	5	0	0	0	0	0	0	0	0	9

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	92.31%	7.69%	6.25%	93.75%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	43

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	0	6	0	0	4	0	0	0	0	1	0	0	11
PEAK HR FACTOR :	0.750			0.500			0.000			0.250			0.919

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-007

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
3:00 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
3:15 PM	0	1	0	0	2	0	0	0	0	1	0	0	4
3:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
3:45 PM	0	2	0	0	1	0	0	0	0	1	0	0	4
4:00 PM	0	4	1	0	2	0	0	0	0	0	0	1	8
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	1	0	1	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	0	2	0	0	0	0	0	0	0	3
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	2

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	91.30%	8.70%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	66.67%	0.00%	33.33%	38

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	4	1	0	3	0	0	0	0	0	0	0	8
PEAK HR FACTOR :	0.625			0.375			0.000			0.000			0.983

CONTROL : 1-Way Stop (WB)

ITM Peak Hour Summary

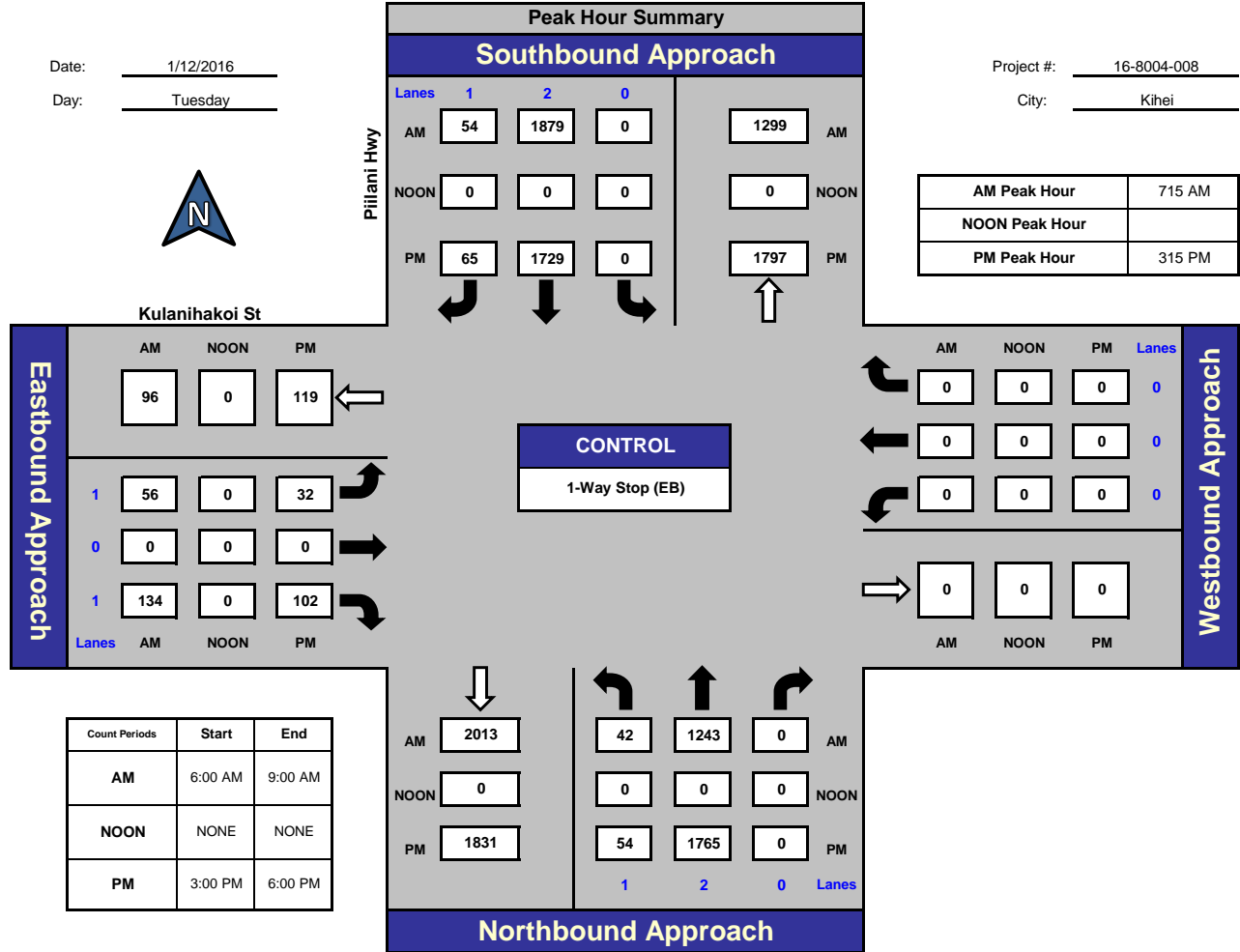


Prepared by:
National Data & Surveying Services

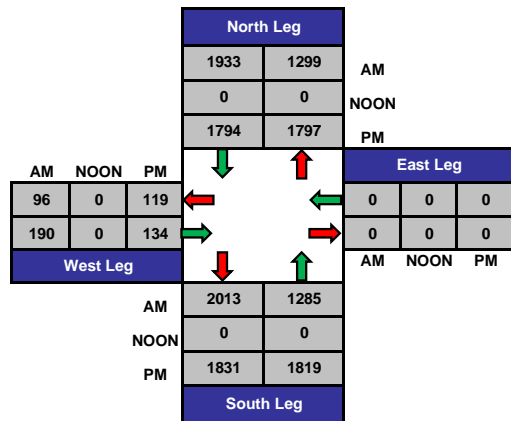
Piilani Hwy and Kulanihako St, Kihei

Date: 1/12/2016
Day: Tuesday

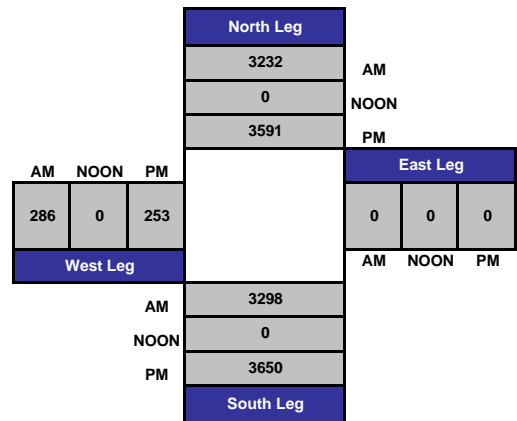
Project #: 16-8004-008
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Kulanihakai St			Kulanihakai St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	2	0	0	2	1	1	0	1	0	0	0	
6:00 AM	2	126	0	0	152	0	6	0	7	0	0	0	293
6:15 AM	2	153	0	0	213	1	13	0	11	0	0	0	393
6:30 AM	4	204	0	0	301	2	13	0	11	0	0	0	535
6:45 AM	5	230	0	0	333	4	15	0	19	0	0	0	606
7:00 AM	3	280	0	0	377	6	19	0	26	0	0	0	711
7:15 AM	4	321	0	0	434	7	10	0	24	0	0	0	800
7:30 AM	7	314	0	0	521	5	14	0	29	0	0	0	890
7:45 AM	10	310	0	0	508	20	17	0	35	0	0	0	900
8:00 AM	21	298	0	0	416	22	15	0	46	0	0	0	818
8:15 AM	12	281	0	0	422	15	15	0	39	0	0	0	784
8:30 AM	10	292	0	0	384	11	12	0	26	0	0	0	735
8:45 AM	4	255	0	0	356	15	10	0	33	0	0	0	673

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	84	3064	0	0	4417	108	159	0	306	0	0	0	8138
APPROACH %'s :	2.67%	97.33%	0.00%	0.00%	97.61%	2.39%	34.19%	0.00%	65.81%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	42	1243	0	0	1879	54	56	0	134	0	0	0	3408
PEAK HR FACTOR :	0.988			0.915			0.779			0.000			0.947

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Pilihi Hwy			Pilihi Hwy			Kulanihako St			Kulanihako St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
3:00 PM	19	421	0	0	393	15	8	0	31	0	0	0	887
3:15 PM	14	458	0	0	433	13	11	0	24	0	0	0	953
3:30 PM	9	489	0	0	378	16	7	0	25	0	0	0	924
3:45 PM	14	398	0	0	463	21	6	0	30	0	0	0	932
4:00 PM	17	420	0	0	455	15	8	0	23	0	0	0	938
4:15 PM	17	440	0	0	405	24	14	0	16	0	0	0	916
4:30 PM	22	461	0	0	423	14	4	0	28	0	0	0	952
4:45 PM	20	395	0	0	404	18	6	0	22	0	0	0	865
5:00 PM	16	353	0	0	426	18	10	0	10	0	0	0	833
5:15 PM	18	363	0	0	419	23	5	0	12	0	0	0	840
5:30 PM	10	315	0	0	395	22	8	0	16	0	0	0	766
5:45 PM	14	277	0	0	347	18	11	0	24	0	0	0	691

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	2	0
1	0	0	0
0	0	0	0
0	0	0	0

TOTAL VOLUMES :	NL 190	NT 4790	NR 0	SL 0	ST 4941	SR 217	EL 98	ET 0	ER 261	WL 0	WT 0	WR 0	TOTAL 10497
APPROACH %'s :	3.82%	96.18%	0.00%	0.00%	95.79%	4.21%	27.30%	0.00%	72.70%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
3	0	2	0

PEAK HR START TIME :	315 PM												
PEAK HR VOL :	54	1765	0	0	1729	65	32	0	102	0	0	0	TOTAL 3747
PEAK HR FACTOR :	0.913			0.927			0.931			0.000			0.983

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Pilihi Hwy		Pilihi Hwy			Kulanihako St			Kulanihako St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	2	0	0	2	1	1	0	1	0	0	0	
6:00 AM	2	125	0	0	146	0	6	0	7	0	0	0	286
6:15 AM	2	144	0	0	205	1	12	0	11	0	0	0	375
6:30 AM	4	200	0	0	292	2	13	0	11	0	0	0	522
6:45 AM	5	224	0	0	322	3	15	0	19	0	0	0	588
7:00 AM	3	273	0	0	367	6	19	0	26	0	0	0	694
7:15 AM	4	319	0	0	422	6	10	0	21	0	0	0	782
7:30 AM	7	307	0	0	512	3	13	0	28	0	0	0	870
7:45 AM	10	306	0	0	498	20	17	0	35	0	0	0	886
8:00 AM	21	292	0	0	408	22	15	0	46	0	0	0	804
8:15 AM	12	275	0	0	410	15	15	0	39	0	0	0	766
8:30 AM	9	283	0	0	371	11	12	0	26	0	0	0	712
8:45 AM	4	249	0	0	344	15	10	0	33	0	0	0	655

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	83	2997	0	0	4297	104	157	0	302	0	0	0	7940
	2.69%	97.31%	0.00%	0.00%	97.64%	2.36%	34.20%	0.00%	65.80%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	42	1224	0	0	1840	51	55	0	130	0	0	0	3342
PEAK HR FACTOR :	0.980			0.913			0.758			0.000			0.943

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Piliani Hwy		Piliani Hwy			Kulanihako St			Kulanihako St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
3:00 PM	19	404	0	0	383	15	8	0	31	0	0	0	860
3:15 PM	14	448	0	0	419	13	11	0	24	0	0	0	929
3:30 PM	9	481	0	0	369	16	7	0	24	0	0	0	906
3:45 PM	14	393	0	0	457	21	6	0	30	0	0	0	921
4:00 PM	17	410	0	0	452	15	8	0	23	0	0	0	925
4:15 PM	17	436	0	0	399	24	14	0	16	0	0	0	906
4:30 PM	22	457	0	0	422	14	4	0	28	0	0	0	947
4:45 PM	20	385	0	0	403	18	6	0	22	0	0	0	854
5:00 PM	16	351	0	0	421	18	10	0	10	0	0	0	826
5:15 PM	18	357	0	0	418	23	5	0	12	0	0	0	833
5:30 PM	10	311	0	0	394	22	8	0	16	0	0	0	761
5:45 PM	14	276	0	0	340	16	11	0	23	0	0	0	680

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	2	0
1	0	0	0
0	0	0	0
0	0	0	0

TOTAL VOLUMES :	NL 190	NT 4709	NR 0	SL 0	ST 4877	SR 215	EL 98	ET 0	ER 259	WL 0	WT 0	WR 0	TOTAL 10348
APPROACH %'s :	3.88%	96.12%	0.00%	0.00%	95.78%	4.22%	27.45%	0.00%	72.55%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
3	0	2	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	54	1732	0	0	1697	65	32	0	101	0	0	0	3681
PEAK HR FACTOR :	0.911			0.922			0.924			0.000			0.991

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Pillani Hwy			Pillani Hwy			Kulanihakoī St			Kulanihakoī St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	1	0	0	6	0	0	0	0	0	0	0	7
6:15 AM	0	9	0	0	8	0	1	0	0	0	0	0	18
6:30 AM	0	4	0	0	9	0	0	0	0	0	0	0	13
6:45 AM	0	6	0	0	11	1	0	0	0	0	0	0	18
7:00 AM	0	7	0	0	10	0	0	0	0	0	0	0	17
7:15 AM	0	2	0	0	12	1	0	0	3	0	0	0	18
7:30 AM	0	7	0	0	9	2	1	0	1	0	0	0	20
7:45 AM	0	4	0	0	10	0	0	0	0	0	0	0	14
8:00 AM	0	6	0	0	8	0	0	0	0	0	0	0	14
8:15 AM	0	6	0	0	12	0	0	0	0	0	0	0	18
8:30 AM	1	9	0	0	13	0	0	0	0	0	0	0	23
8:45 AM	0	6	0	0	12	0	0	0	0	0	0	0	18

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	1	67	0	0	120	4	2	0	4	0	0	0	198
	1.47%	98.53%	0.00%	0.00%	96.77%	3.23%	33.33%	0.00%	66.67%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	0	19	0	0	39	3	1	0	4	0	0	0	66
PEAK HR FACTOR :	0.679			0.808			0.417			0.000			0.943

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-008

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	Piliani Hwy			Piliani Hwy			Kulanihako St			Kulanihako St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	17	0	0	10	0	0	0	0	0	0	0	27
3:15 PM	0	10	0	0	14	0	0	0	0	0	0	0	24
3:30 PM	0	8	0	0	9	0	0	0	1	0	0	0	18
3:45 PM	0	5	0	0	6	0	0	0	0	0	0	0	11
4:00 PM	0	10	0	0	3	0	0	0	0	0	0	0	13
4:15 PM	0	4	0	0	6	0	0	0	0	0	0	0	10
4:30 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
4:45 PM	0	10	0	0	1	0	0	0	0	0	0	0	11
5:00 PM	0	2	0	0	5	0	0	0	0	0	0	0	7
5:15 PM	0	6	0	0	1	0	0	0	0	0	0	0	7
5:30 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	1	0	0	7	2	0	0	1	0	0	0	11

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	96.97%	3.03%	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	149

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	315 PM												TOTAL
PEAK HR VOL :	0	33	0	0	32	0	0	0	1	0	0	0	66
PEAK HR FACTOR :	0.825			0.571			0.250			0.000			0.991

CONTROL : 1-Way Stop (EB)

ITM Peak Hour Summary

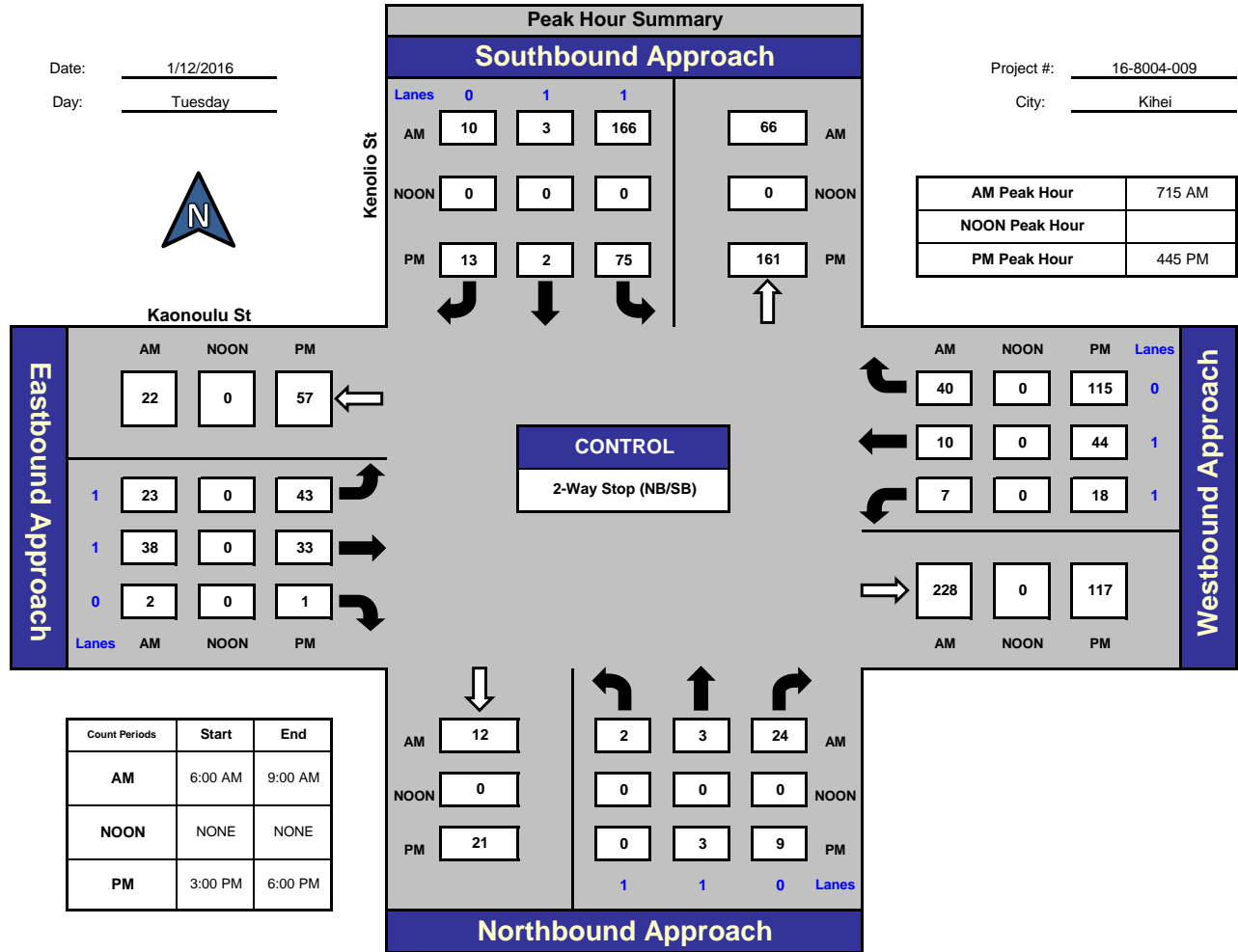


Prepared by:
National Data & Surveying Services

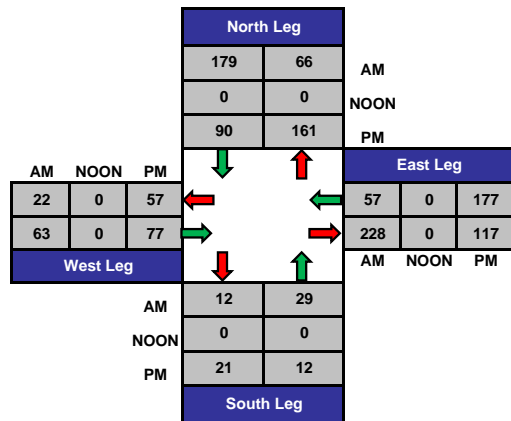
Kenolio St and Kaonoulu St, Kihei

Date: 1/12/2016
Day: Tuesday

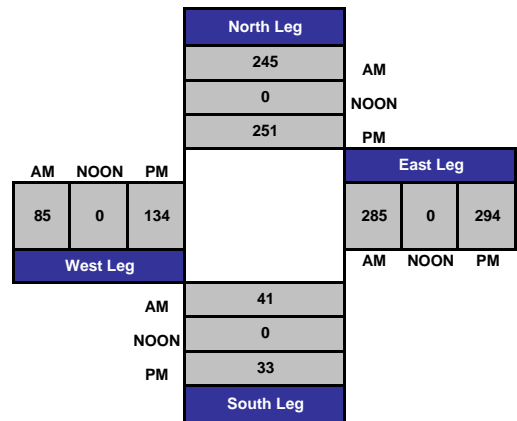
Project #: 16-8004-009
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-009

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Kenolio St			Kenolio St			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
6:00 AM	0	0	4	7	0	1	0	4	0	1	0	1	18
6:15 AM	1	0	2	13	0	1	0	8	1	1	3	7	37
6:30 AM	0	2	6	30	1	0	4	8	1	0	1	9	62
6:45 AM	0	0	6	27	0	1	1	8	0	0	6	7	56
7:00 AM	0	3	4	31	0	2	2	7	0	2	3	7	61
7:15 AM	0	2	8	37	1	2	5	8	1	1	3	15	83
7:30 AM	0	0	8	47	2	4	5	8	0	1	3	8	86
7:45 AM	1	1	4	43	0	3	6	13	1	2	0	11	85
8:00 AM	1	0	4	39	0	1	7	9	0	3	4	6	74
8:15 AM	1	1	2	24	0	2	2	9	0	2	2	14	59
8:30 AM	0	0	4	20	1	3	2	11	0	1	9	10	61
8:45 AM	0	0	2	22	0	2	2	6	0	2	5	8	49

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	9	54	340	5	22	36	99	4	16	39	103	731
APPROACH %'s :	5.97%	13.43%	80.60%	92.64%	1.36%	5.99%	25.90%	71.22%	2.88%	10.13%	24.68%	65.19%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	2	3	24	166	3	10	23	38	2	7	10	40	328
PEAK HR FACTOR :	0.725			0.844			0.788			0.750			0.953

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-009

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Kenolio St			Kenolio St			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	1	0	6	7	0	1	13	12	1	1	13	22	77
3:15 PM	0	1	3	24	2	4	9	10	0	6	7	18	84
3:30 PM	0	2	1	19	3	3	5	7	0	2	9	18	69
3:45 PM	0	0	4	15	0	5	15	7	1	5	12	12	76
4:00 PM	1	0	2	23	1	3	8	9	0	5	6	25	83
4:15 PM	0	2	2	18	1	0	18	5	0	4	4	15	69
4:30 PM	0	0	2	24	0	2	13	5	2	3	7	30	88
4:45 PM	0	0	5	23	0	3	12	6	0	2	13	29	93
5:00 PM	0	1	0	12	2	3	11	9	1	6	8	32	85
5:15 PM	0	1	1	23	0	2	8	9	0	6	10	19	79
5:30 PM	0	1	3	17	0	5	12	9	0	4	13	35	99
5:45 PM	0	0	4	23	1	2	6	2	0	6	11	15	70

UTURNS			
NB	SB	EB	WB
1			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	2	8	33	228	10	33	130	90	5	50	113	270	972
	4.65%	18.60%	76.74%	84.13%	3.69%	12.18%	57.78%	40.00%	2.22%	11.55%	26.10%	62.36%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	3	9	75	2	13	43	33	1	18	44	115	356
PEAK HR FACTOR :	0.600			0.865			0.917			0.851			0.899

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-009

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Kenolio St		Kenolio St			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	1	0	1	1	0	1	1	0	1	1	0	
6:00 AM	0	0	4	7	0	1	0	4	0	1	0	1	18
6:15 AM	1	0	2	13	0	1	0	8	1	1	3	7	37
6:30 AM	0	2	6	30	1	0	2	8	0	0	1	9	59
6:45 AM	0	0	6	26	0	1	1	8	0	0	6	7	55
7:00 AM	0	3	4	31	0	2	2	7	0	2	3	7	61
7:15 AM	0	2	8	37	1	2	5	8	1	1	3	15	83
7:30 AM	0	0	7	46	2	4	5	8	0	1	3	7	83
7:45 AM	1	1	4	43	0	3	6	13	1	2	0	11	85
8:00 AM	1	0	4	39	0	1	7	9	0	3	4	6	74
8:15 AM	1	1	2	23	0	2	2	8	0	2	2	14	57
8:30 AM	0	0	4	20	1	3	2	10	0	1	9	10	60
8:45 AM	0	0	2	21	0	2	2	6	0	2	5	8	48

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	4	9	53	336	5	22	34	97	3	16	39	102	720
	6.06%	13.64%	80.30%	92.56%	1.38%	6.06%	25.37%	72.39%	2.24%	10.19%	24.84%	64.97%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	2	3	23	165	3	10	23	38	2	7	10	39	325
PEAK HR FACTOR :	0.700			0.856			0.788			0.737			0.956

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-009

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Kenolio St		Kenolio St			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	1	0	1	1	0	1	1	0	1	1	0	
3:00 PM	1	0	6	7	0	1	13	12	1	1	13	22	
3:15 PM	0	1	3	24	1	4	9	10	0	6	7	18	
3:30 PM	0	2	1	19	3	3	5	7	0	2	9	18	
3:45 PM	0	0	4	15	0	5	15	7	1	5	12	12	
4:00 PM	1	0	2	23	1	3	7	9	0	5	6	25	
4:15 PM	0	2	2	18	1	0	18	5	0	4	4	15	
4:30 PM	0	0	2	24	0	2	13	5	2	3	7	30	
4:45 PM	0	0	5	23	0	3	12	6	0	2	13	29	
5:00 PM	0	1	0	12	2	3	11	9	1	6	8	32	
5:15 PM	0	1	1	23	0	2	8	9	0	6	10	19	
5:30 PM	0	1	3	17	0	5	12	9	0	4	13	35	
5:45 PM	0	0	4	23	1	2	6	2	0	6	11	15	

UTURNS			
NB	SB	EB	WB
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
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 VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	2	8	33	228	9	33	129	90	5	50	113	270	970
	4.65%	18.60%	76.74%	84.44%	3.33%	12.22%	57.59%	40.18%	2.23%	11.55%	26.10%	62.36%	

NB	SB	EB	WB
1	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	3	9	75	2	13	43	33	1	18	44	115	356
PEAK HR FACTOR :	0.600			0.865			0.917			0.851			0.899

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-009

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL	
	Kenolio St			Kenolio St			Kaonoulu St			Kaonoulu St				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	2	0	1	0	0	0	0	3
6:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	1	0	0	0	0	0	0	0	1	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	40.00%	40.00%	20.00%	0.00%	0.00%	100.00%	11

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	7:15 AM												TOTAL
PEAK HR VOL :	0	0	1	1	0	0	0	0	0	0	0	1	3
PEAK HR FACTOR :	0.250			0.250			0.000			0.250			0.956

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-009

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	Kenolio St			Kenolio St			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	2

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.899

CONTROL : 2-Way Stop (NB/SB)

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

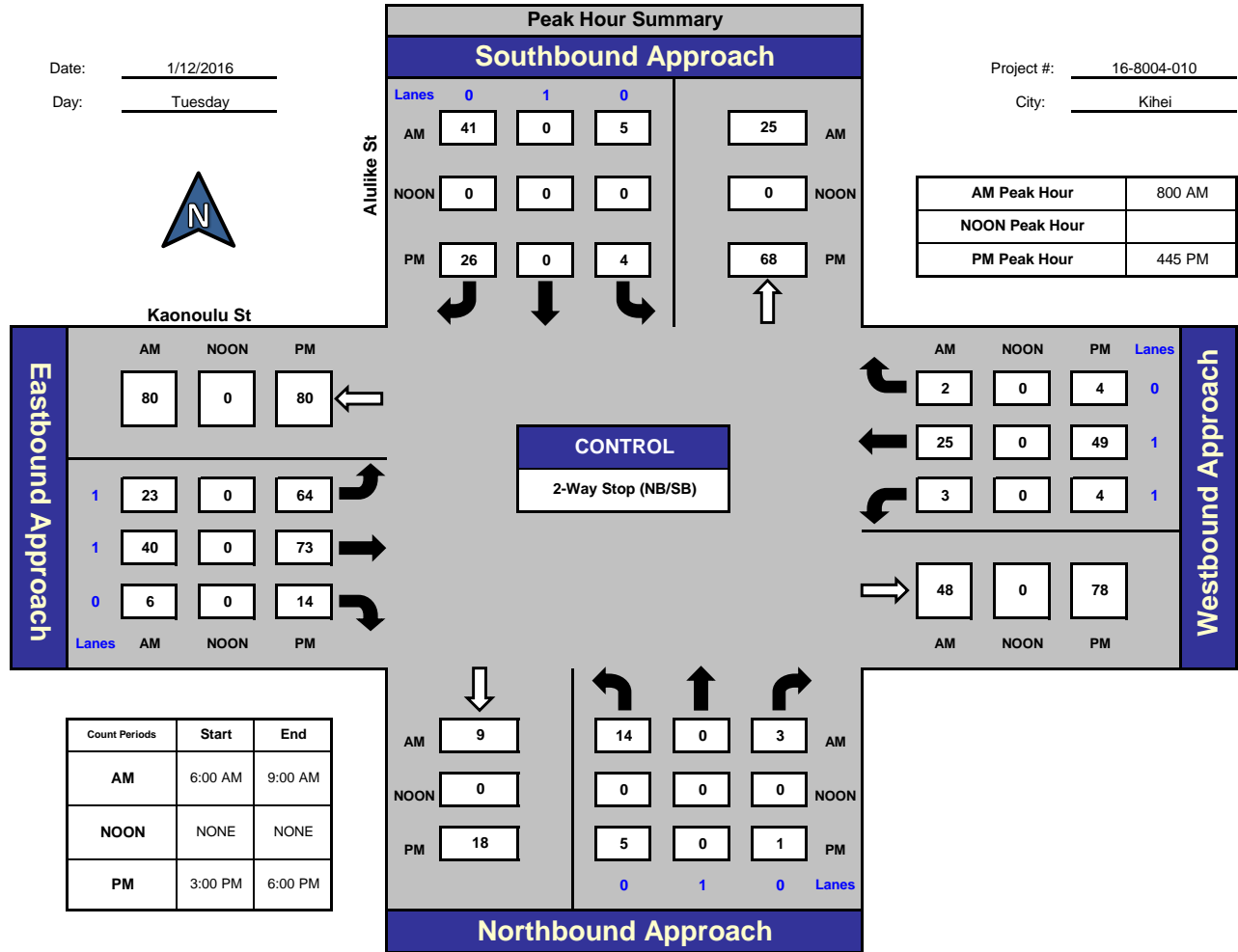
Alulike St and Kaonoulu St, Kihei

Date: 1/12/2016

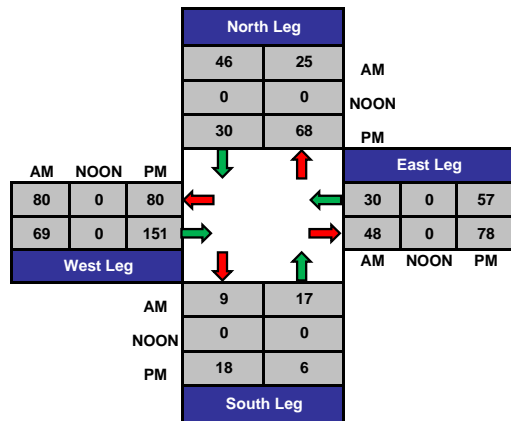
Day: Tuesday

Project #: 16-8004-010

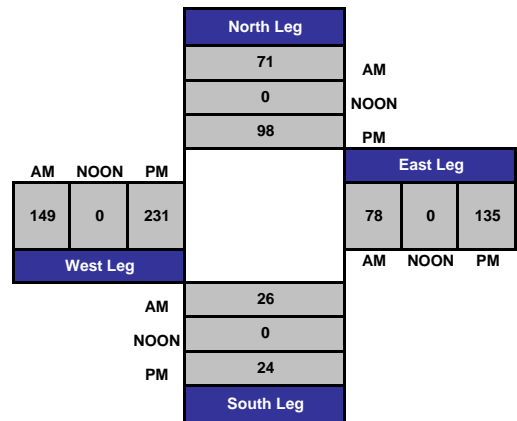
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-010

City: Kihei

TOTALS

Day: Tuesday

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL
	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	1	1	0	1	1	0	
6:00 AM	3	0	0	0	0	2	0	5	1	0	1	0	12
6:15 AM	1	0	3	0	0	0	0	5	0	1	3	1	14
6:30 AM	2	2	1	0	0	9	0	12	0	0	1	0	27
6:45 AM	3	0	2	0	0	9	3	7	2	0	7	0	33
7:00 AM	5	1	2	0	1	8	1	8	2	2	3	0	33
7:15 AM	2	1	0	0	0	9	1	13	0	0	5	0	31
7:30 AM	5	0	1	1	1	11	7	12	1	0	8	0	47
7:45 AM	0	0	1	1	0	5	1	18	2	0	4	0	32
8:00 AM	4	0	0	1	0	5	3	14	2	1	5	0	35
8:15 AM	4	0	1	3	0	13	8	9	2	0	5	0	45
8:30 AM	3	0	2	0	0	12	6	10	0	2	8	2	45
8:45 AM	3	0	0	1	0	11	6	7	2	0	7	0	37

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	67.31%	7.69%	25.00%	6.80%	1.94%	91.26%	21.18%	70.59%	8.24%	9.09%	86.36%	4.55%	391

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	14	0	3	5	0	41	23	40	6	3	25	2	162
PEAK HR FACTOR :	0.850			0.719			0.908			0.625			0.900

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-010

Day: Tuesday

City: Kihei

TOTALS

Date: 1/12/2016

NS/EW Streets:	PM												TOTAL
	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	1	0	0	0	8	13	25	4	2	11	1	65
3:15 PM	3	2	1	0	0	3	13	19	3	0	10	0	54
3:30 PM	4	1	0	1	0	6	10	11	5	1	12	0	51
3:45 PM	1	0	1	0	0	13	11	23	5	0	17	0	71
4:00 PM	3	0	1	1	0	10	12	13	1	0	9	1	51
4:15 PM	3	2	1	1	0	6	12	21	4	0	3	1	54
4:30 PM	1	0	1	2	0	8	10	17	2	0	9	0	50
4:45 PM	2	0	0	0	0	7	14	18	3	2	12	1	59
5:00 PM	2	0	1	1	0	7	19	19	5	0	9	1	64
5:15 PM	1	0	0	2	0	5	13	15	4	1	11	1	53
5:30 PM	0	0	0	1	0	7	18	21	2	1	17	1	68
5:45 PM	4	0	0	0	0	5	14	8	4	3	8	1	47

UTURNS			
NB	SB	EB	WB

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	24	6	6	9	0	85	159	210	42	10	128	8	687
APPROACH %'s :	66.67%	16.67%	16.67%	9.57%	0.00%	90.43%	38.69%	51.09%	10.22%	6.85%	87.67%	5.48%	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	5	0	1	4	0	26	64	73	14	4	49	4	244
PEAK HR FACTOR :	0.500			0.938			0.878			0.750			0.897

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-010

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

AM

NS/EW Streets:	Alulike St		Alulike St			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
6:00 AM	3	0	0	0	0	2	0	5	1	0	1	0	
6:15 AM	1	0	3	0	0	0	0	5	0	1	3	1	
6:30 AM	2	1	1	0	0	9	0	9	0	0	1	0	
6:45 AM	3	0	2	0	0	9	3	7	2	0	7	0	
7:00 AM	5	1	2	0	1	8	1	8	2	2	3	0	
7:15 AM	2	1	0	0	0	9	1	13	0	0	5	0	
7:30 AM	5	0	1	1	0	11	7	12	1	0	7	0	
7:45 AM	0	0	1	1	0	5	1	18	2	0	4	0	
8:00 AM	4	0	0	1	0	5	3	13	2	1	5	0	
8:15 AM	4	0	1	2	0	13	8	9	2	0	5	0	
8:30 AM	3	0	2	0	0	11	6	9	0	2	8	2	
8:45 AM	3	0	0	1	0	11	6	7	2	0	7	0	

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	68.63%	5.88%	25.49%	6.00%	1.00%	93.00%	21.82%	69.70%	8.48%	9.23%	86.15%	4.62%	381

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	14	0	3	4	0	40	23	38	6	3	25	2	158
PEAK HR FACTOR :	0.850			0.733			0.882			0.625			0.898

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-010

Day: Tuesday

City: Kihei

Cars

Date: 1/12/2016

PM

NS/EW Streets:	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	1	0	0	0	8	13	25	4	2	11	1	65
3:15 PM	3	2	1	0	0	2	13	19	3	0	10	0	53
3:30 PM	3	1	0	1	0	6	10	11	5	1	12	0	50
3:45 PM	1	0	1	0	0	13	11	23	5	0	17	0	71
4:00 PM	3	0	1	1	0	9	12	12	1	0	9	1	49
4:15 PM	3	2	1	1	0	6	12	21	4	0	3	1	54
4:30 PM	1	0	1	2	0	8	10	17	2	0	9	0	50
4:45 PM	2	0	0	0	0	7	14	18	3	2	12	1	59
5:00 PM	2	0	1	1	0	7	19	18	5	0	9	1	63
5:15 PM	1	0	0	2	0	5	13	15	4	1	11	1	53
5:30 PM	0	0	0	1	0	7	18	21	2	1	17	1	68
5:45 PM	4	0	0	0	0	5	14	8	4	3	8	1	47

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	65.71%	17.14%	17.14%	9.78%	0.00%	90.22%	38.88%	50.86%	10.27%	6.85%	87.67%	5.48%	682

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	5	0	1	4	0	26	64	72	14	4	49	4	243
PEAK HR FACTOR :	0.500			0.938			0.893			0.750			0.893

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-010

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

NS/EW Streets:	AM												TOTAL	
	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	1	0	0	0	0	0	3	0	0	0	0	0	4
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	1	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1
8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0.00%	100.00%	0.00%	33.33%	33.33%	33.33%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	10

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	0	0	1	0	1	0	2	0	0	0	0	4
PEAK HR FACTOR :	0.000			0.500			0.500			0.000			0.898

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:
National Data & Surveying Services

Project ID: 16-8004-010

2 Axle+ Trucks

Day: Tuesday

City: Kihei

Date: 1/12/2016

PM													
NS/EW Streets:	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
3:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

UTURNS			
NB	SB	EB	WB

TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	1	0	0	0	0	2	0	2	0	0	0	0	5
	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	

NB	SB	EB	WB
0	0	0	0

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	0	0	0	0	1
PEAK HR FACTOR :	0.000			0.000			0.250			0.000			0.893

CONTROL : 2-Way Stop (NB/SB)

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

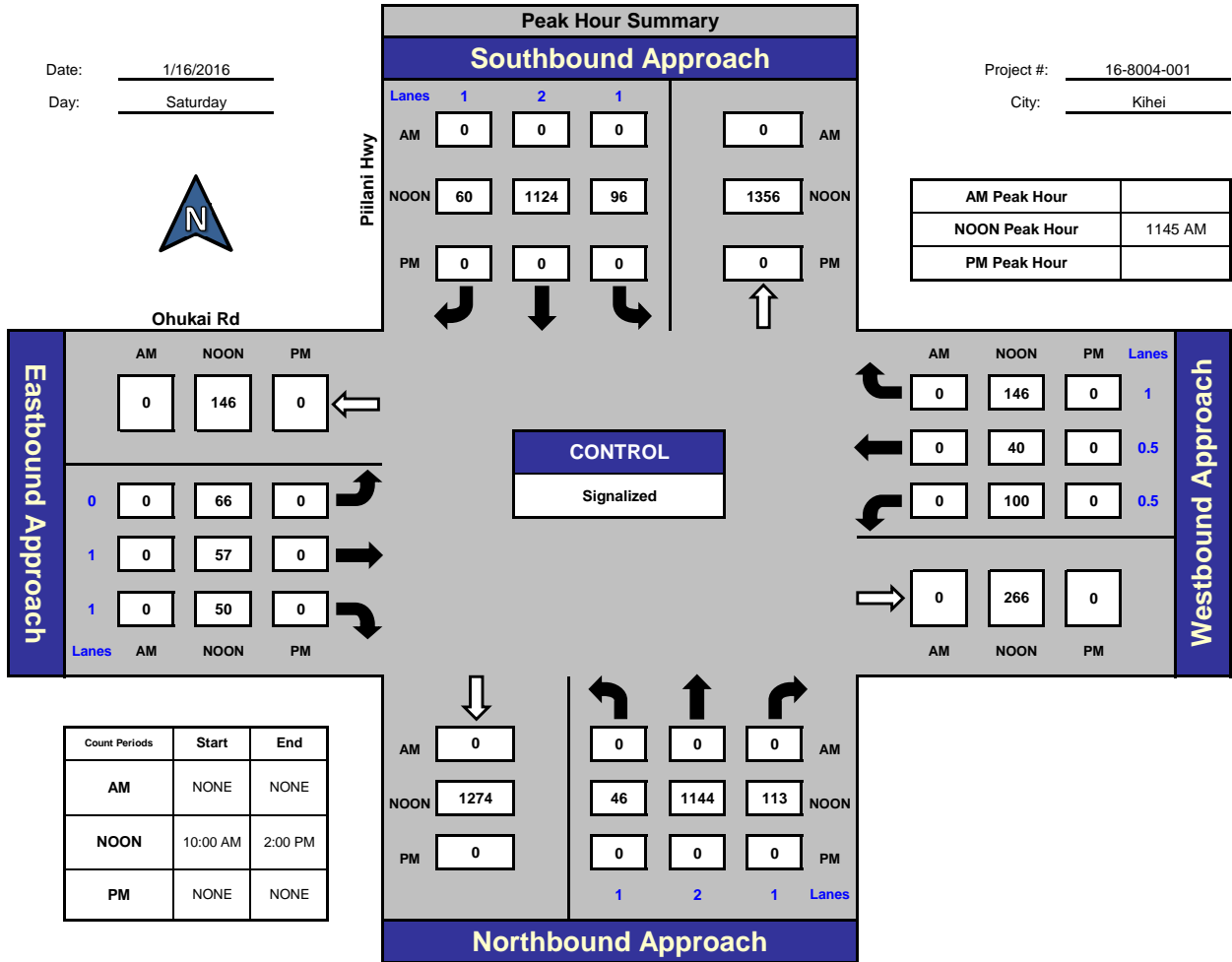
Piilani Hwy and Ohukai Rd , Kihei

Date: 1/16/2016

Day: Saturday

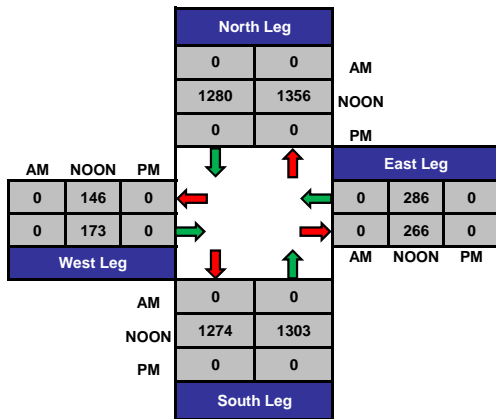
Project #: 16-8004-001

City: Kihei

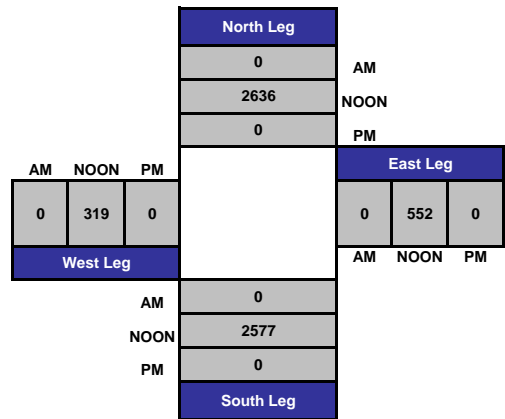


Count Periods	Start	End
AM	NONE	NONE
NOON	10:00 AM	2:00 PM
PM	NONE	NONE

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-001

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NOON

NS/EW Streets:	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5	WR 1	
10:00 AM	8	313	37	12	203	12	17	27	18	30	6	39	722
10:15 AM	7	270	22	24	247	8	17	20	21	35	14	41	726
10:30 AM	12	278	19	29	253	6	20	7	14	40	9	39	726
10:45 AM	5	286	22	27	252	13	19	17	17	30	8	33	729
11:00 AM	12	296	40	22	223	10	20	12	11	28	7	46	727
11:15 AM	7	299	26	26	272	7	19	19	11	30	8	37	761
11:30 AM	8	249	20	27	269	16	25	10	15	39	13	50	741
11:45 AM	7	323	28	25	281	16	14	18	11	26	12	24	785
12:00 PM	11	260	25	29	276	19	14	14	8	29	9	39	733
12:15 PM	12	282	38	20	273	9	26	12	13	28	5	48	766
12:30 PM	16	279	22	22	294	16	12	13	18	17	14	35	758
12:45 PM	5	258	18	30	315	16	13	19	10	30	9	30	753
1:00 PM	10	263	21	15	296	15	12	10	13	19	11	26	711
1:15 PM	12	256	25	22	283	15	14	12	15	26	6	27	713
1:30 PM	9	242	12	23	303	16	27	12	9	33	12	28	726
1:45 PM	12	256	26	23	287	13	8	20	9	37	5	32	728
TOTAL VOLUMES :	153	4410	401	376	4327	207	277	242	213	477	148	574	11805
APPROACH %'s :	3.08%	88.84%	8.08%	7.66%	88.13%	4.22%	37.84%	33.06%	29.10%	39.78%	12.34%	47.87%	
PEAK HR START TIME :	1145 AM												TOTAL
PEAK HR VOL :	46	1144	113	96	1124	60	66	57	50	100	40	146	3042
PEAK HR FACTOR :	0.910												0.969

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
1			
0			
0			
0			
1			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
NB	SB	EB	WB
2	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-001

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	Pillani Hwy			Pillani Hwy			Ohukai Rd			Ohukai Rd			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0	ET 1	ER 1	WL 0.5	WT 0.5	WR 1	
10:00 AM	8	313	37	12	200	12	17	27	18	30	6	39	719
10:15 AM	7	268	22	24	242	8	17	20	21	34	14	41	718
10:30 AM	12	270	19	29	249	6	20	7	14	40	9	38	713
10:45 AM	5	283	21	27	246	13	19	17	16	30	8	32	717
11:00 AM	12	294	40	21	220	10	20	12	11	28	7	46	721
11:15 AM	7	294	26	26	268	7	19	18	11	30	8	37	751
11:30 AM	8	247	20	27	265	16	24	10	15	39	13	50	734
11:45 AM	7	317	28	25	277	16	14	18	11	26	11	24	774
12:00 PM	11	257	25	29	274	19	14	14	8	29	9	37	726
12:15 PM	11	275	38	20	270	9	26	12	13	28	5	48	755
12:30 PM	16	271	20	22	292	16	12	13	18	17	14	34	745
12:45 PM	5	252	18	29	310	16	13	19	10	29	9	30	740
1:00 PM	10	260	20	15	292	15	12	10	13	19	11	26	703
1:15 PM	12	253	25	21	280	15	14	12	15	26	6	25	704
1:30 PM	9	241	12	23	300	16	27	12	9	33	12	26	720
1:45 PM	12	255	23	23	286	13	8	20	9	37	5	30	721
TOTAL VOLUMES :	152	4350	394	373	4271	207	276	241	212	475	147	563	11661
APPROACH %'s :	3.10%	88.85%	8.05%	7.69%	88.04%	4.27%	37.86%	33.06%	29.08%	40.08%	12.41%	47.51%	
PEAK HR START TIME :	1145 AM												TOTAL
PEAK HR VOL :	45	1120	111	96	1113	60	66	57	50	100	39	143	3000
PEAK HR FACTOR :	0.906												0.969

UTURNS			
NB	SB	EB	WB
0			
0			
0			
0			
1			
0			
0			
1			
0			
1			
0			
0			
0			
0			
0			
0			
0			
0			
0			
0			
2	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-001

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Pillani Hwy		Pillani Hwy			Ohukai Rd			Ohukai Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT		WR
LANES:	1	2	1	1	2	1	0	1	1	0.5	0.5	1	
10:00 AM	0	0	0	0	3	0	0	0	0	0	0	0	3
10:15 AM	0	2	0	0	5	0	0	0	0	1	0	0	8
10:30 AM	0	8	0	0	4	0	0	0	0	0	0	1	13
10:45 AM	0	3	1	0	6	0	0	0	1	0	0	1	12
11:00 AM	0	2	0	1	3	0	0	0	0	0	0	0	6
11:15 AM	0	5	0	0	4	0	0	1	0	0	0	0	10
11:30 AM	0	2	0	0	4	0	1	0	0	0	0	0	7
11:45 AM	0	6	0	0	4	0	0	0	0	0	1	0	11
12:00 PM	0	3	0	0	2	0	0	0	0	0	0	2	7
12:15 PM	1	7	0	0	3	0	0	0	0	0	0	0	11
12:30 PM	0	8	2	0	2	0	0	0	0	0	0	1	13
12:45 PM	0	6	0	1	5	0	0	0	0	1	0	0	13
1:00 PM	0	3	1	0	4	0	0	0	0	0	0	0	8
1:15 PM	0	3	0	1	3	0	0	0	0	0	0	2	9
1:30 PM	0	1	0	0	3	0	0	0	0	0	0	2	6
1:45 PM	0	1	3	0	1	0	0	0	0	0	0	2	7
TOTAL VOLUMES :	1	60	7	3	56	0	1	1	1	2	1	11	144
APPROACH %'s :	1.47%	88.24%	10.29%	5.08%	94.92%	0.00%	33.33%	33.33%	33.33%	14.29%	7.14%	78.57%	
PEAK HR START TIME :	1145 AM												
PEAK HR VOL :	1	24	2	0	11	0	0	0	0	0	1	3	42
PEAK HR FACTOR :	0.675			0.688			0.000			0.500			0.969

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

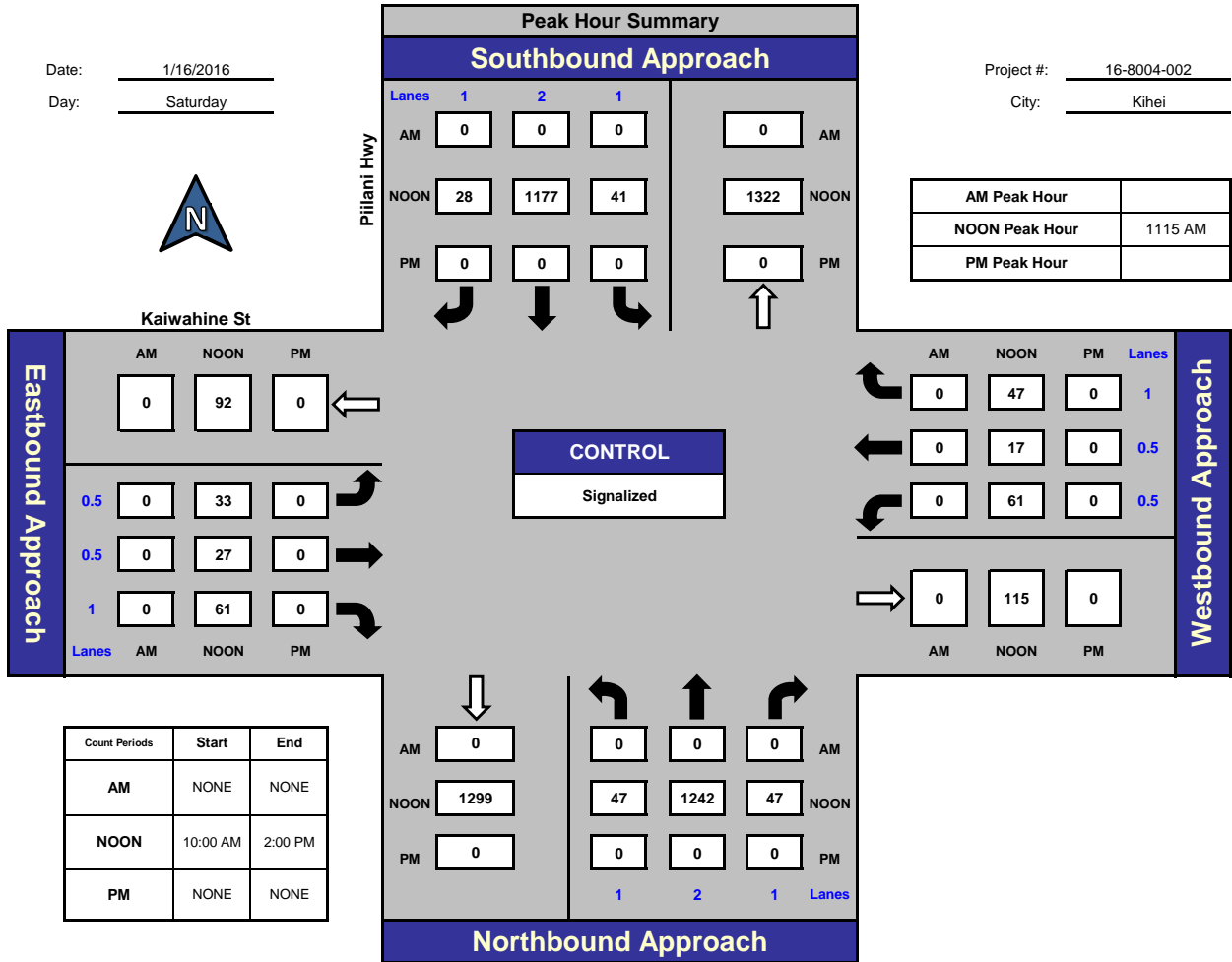
Piilani Hwy and Kaiwahine St, Kihei

Date: 1/16/2016

Day: Saturday

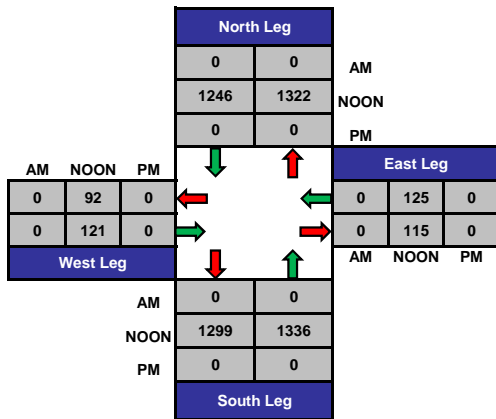
Project #: 16-8004-002

City: Kihei

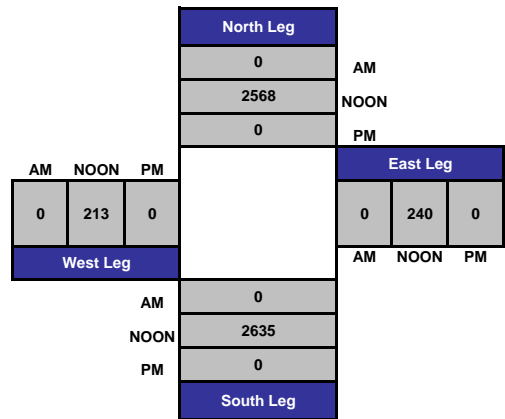


Count Periods	Start	End
AM	NONE	NONE
NOON	10:00 AM	2:00 PM
PM	NONE	NONE

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-002

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NS/EW Streets:	NOON												TOTAL
	Pillani Hwy			Pillani Hwy			Kaiwahine St			Kaiwahine St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	1	1	2	1	0.5	0.5	1	0.5	0.5	1	
10:00 AM	0	3	0	0	3	0	0	0	0	0	0	0	6
10:15 AM	0	1	0	0	4	0	0	0	1	0	0	0	6
10:30 AM	0	9	0	0	5	1	0	0	0	0	0	0	15
10:45 AM	0	6	0	0	7	0	1	0	0	0	0	0	14
11:00 AM	0	4	0	1	6	0	0	0	0	0	1	0	12
11:15 AM	0	4	0	0	2	0	0	0	0	0	0	0	6
11:30 AM	0	3	0	0	4	0	0	0	0	0	0	0	7
11:45 AM	0	3	0	0	2	0	0	0	0	0	0	0	5
12:00 PM	0	5	0	0	1	0	0	0	0	0	0	0	6
12:15 PM	0	8	0	0	3	0	0	0	1	0	0	0	12
12:30 PM	0	6	0	0	1	0	0	0	0	0	0	0	7
12:45 PM	0	8	0	0	6	1	0	0	0	0	0	1	16
1:00 PM	0	3	0	0	5	1	0	0	1	0	0	0	10
1:15 PM	0	4	0	0	4	0	0	0	0	0	0	0	8
1:30 PM	0	2	0	0	3	0	0	0	0	0	0	0	5
1:45 PM	0	4	0	0	1	0	0	0	0	0	0	0	5
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	73	0	1	57	3	1	0	3	0	1	1	140
	0.00%	100.00%	0.00%	1.64%	93.44%	4.92%	25.00%	0.00%	75.00%	0.00%	50.00%	50.00%	
PEAK HR START TIME :	1115 AM												TOTAL
PEAK HR VOL :	0	15	0	0	9	0	0	0	0	0	0	0	24
PEAK HR FACTOR :	0.750			0.563			0.000			0.000			0.978

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

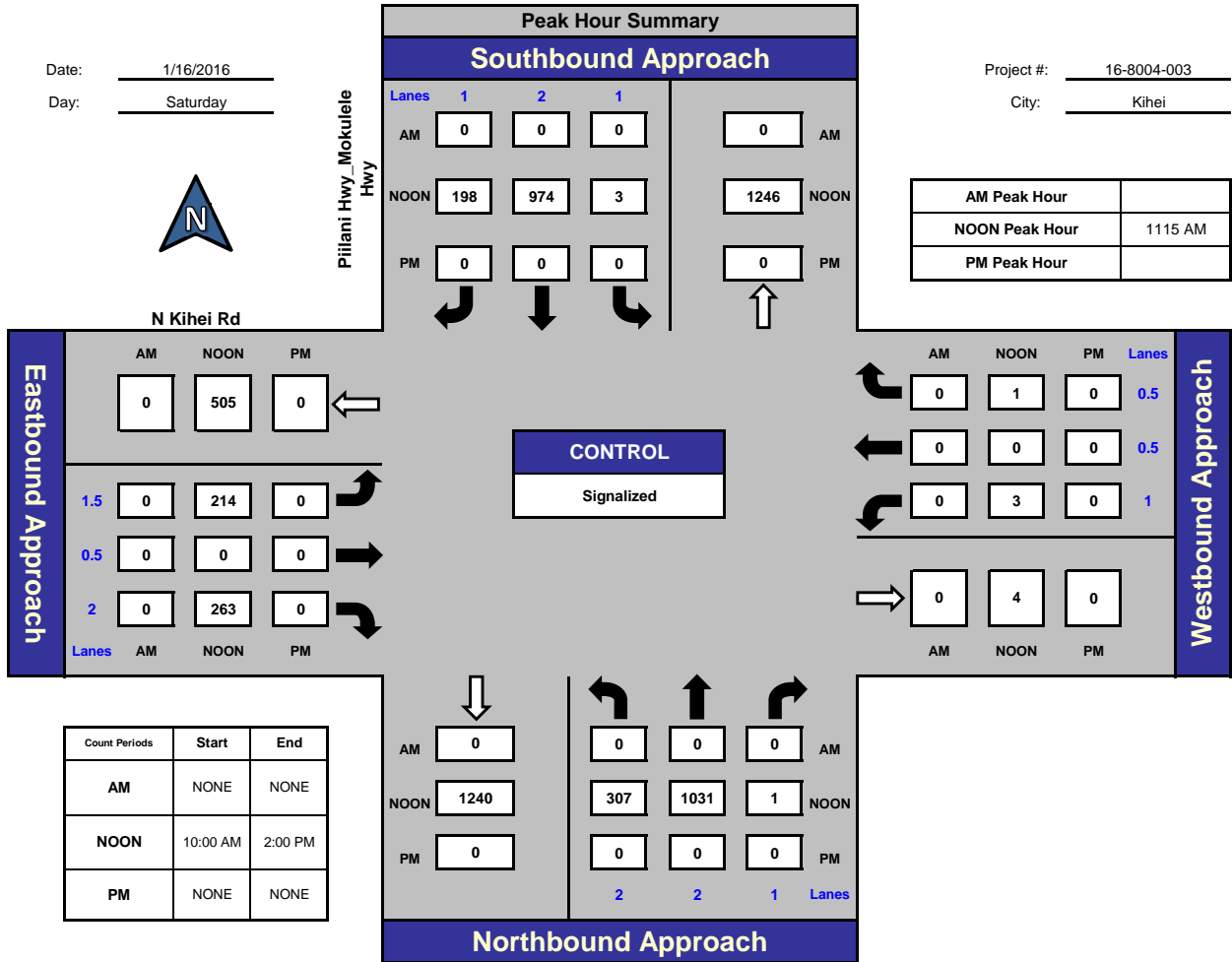


National Data & Surveying Services

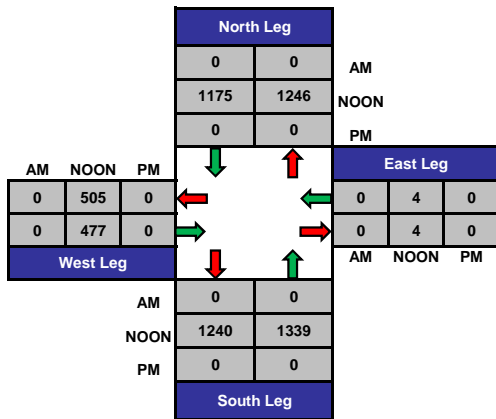
Piilani Hwy Mokulele Hwy and N Kihei Rd , Kihei

Date: 1/16/2016
Day: Saturday

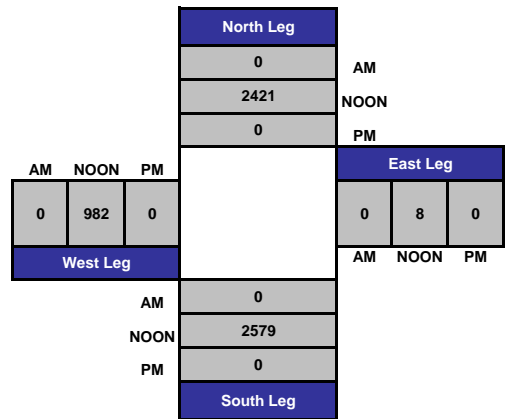
Project #: 16-8004-003
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-003

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NOON

NS/EW Streets:	Piilani Hwy_Mokulele Hwy			Piilani Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
10:00 AM	80	286	0	0	173	49	56	1	49	5	1	0	700
10:15 AM	68	265	0	2	180	35	46	2	66	0	0	0	664
10:30 AM	62	292	0	0	216	43	43	0	67	1	1	0	725
10:45 AM	69	277	0	0	204	45	51	0	59	0	0	0	705
11:00 AM	65	277	1	0	185	52	51	0	68	0	0	1	700
11:15 AM	72	278	1	1	236	51	52	0	58	0	0	1	750
11:30 AM	66	262	0	0	221	53	63	0	76	1	0	0	742
11:45 AM	90	240	0	2	242	43	45	0	59	1	0	0	722
12:00 PM	79	251	0	0	275	51	54	0	70	1	0	0	781
12:15 PM	78	241	5	0	235	47	37	0	64	1	0	0	708
12:30 PM	81	220	2	1	257	59	40	0	80	0	0	2	742
12:45 PM	86	237	0	0	263	44	39	0	81	1	1	0	752
1:00 PM	70	219	0	0	229	51	53	0	68	0	0	1	691
1:15 PM	60	215	1	1	243	47	51	1	75	2	0	0	696
1:30 PM	65	228	0	0	290	53	41	0	67	0	0	0	744
1:45 PM	55	232	0	1	289	66	37	0	57	0	0	1	738
TOTAL VOLUMES :	1146	4020	10	8	3738	789	759	4	1064	13	3	6	11560
APPROACH %'s :	22.14%	77.67%	0.19%	0.18%	82.43%	17.40%	41.54%	0.22%	58.24%	59.09%	13.64%	27.27%	
PEAK HR START TIME :	1115 AM												TOTAL
PEAK HR VOL :	307	1031	1	3	974	198	214	0	263	3	0	1	2995
PEAK HR FACTOR :	0.954			0.901			0.858			1.000			0.959

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-003

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	Piihoni Hwy_Mokulele Hwy			Piihoni Hwy_Mokulele Hwy			N Kihei Rd			N Kihei Rd			TOTAL			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR				
	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5				
10:00 AM	80	284	0	0	170	49	55	1	48	5	1	0	693			
10:15 AM	67	264	0	2	178	34	46	2	65	0	0	0	658			
10:30 AM	61	286	0	0	211	42	41	0	66	1	1	0	709			
10:45 AM	68	273	0	0	199	43	51	0	59	0	0	0	693			
11:00 AM	64	277	1	0	179	50	49	0	65	0	0	1	686			
11:15 AM	71	275	1	1	234	51	52	0	58	0	0	1	744			
11:30 AM	64	260	0	0	216	52	62	0	75	1	0	0	730			
11:45 AM	90	234	0	2	241	42	44	0	58	1	0	0	712			
12:00 PM	78	246	0	0	273	51	51	0	70	1	0	0	770			
12:15 PM	76	236	5	0	231	46	36	0	64	1	0	0	695			
12:30 PM	79	214	2	1	257	59	38	0	80	0	0	2	732			
12:45 PM	86	229	0	0	258	43	37	0	79	0	1	0	733			
1:00 PM	70	214	0	0	225	49	50	0	67	0	0	1	676			
1:15 PM	59	211	1	1	241	47	50	1	75	2	0	0	688			
1:30 PM	64	226	0	0	287	53	39	0	66	0	0	0	735			
1:45 PM	55	229	0	1	289	66	34	0	57	0	0	1	732			
TOTAL VOLUMES :	1132	3958	10	8	3689	777	735	4	1052	12	3	6	11386			
APPROACH %'s :	22.20%	77.61%	0.20%	0.18%	82.45%	17.37%	41.04%	0.22%	58.74%	57.14%	14.29%	28.57%				
PEAK HR START TIME :	1115 AM												TOTAL			
PEAK HR VOL :	303	1015	1	3	964	196	209	0	261	3	0	1	2956			
PEAK HR FACTOR :	0.950												0.897	0.858	1.000	0.960

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-003

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NS/EW Streets:	NOON												TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
LANES:	2	2	1	1	2	1	1.5	0.5	2	1	0.5	0.5	
10:00 AM	0	2	0	0	3	0	1	0	1	0	0	0	7
10:15 AM	1	1	0	0	2	1	0	0	1	0	0	0	6
10:30 AM	1	6	0	0	5	1	2	0	1	0	0	0	16
10:45 AM	1	4	0	0	5	2	0	0	0	0	0	0	12
11:00 AM	1	0	0	0	6	2	2	0	3	0	0	0	14
11:15 AM	1	3	0	0	2	0	0	0	0	0	0	0	6
11:30 AM	2	2	0	0	5	1	1	0	1	0	0	0	12
11:45 AM	0	6	0	0	1	1	1	0	1	0	0	0	10
12:00 PM	1	5	0	0	2	0	3	0	0	0	0	0	11
12:15 PM	2	5	0	0	4	1	1	0	0	0	0	0	13
12:30 PM	2	6	0	0	0	0	2	0	0	0	0	0	10
12:45 PM	0	8	0	0	5	1	2	0	2	1	0	0	19
1:00 PM	0	5	0	0	4	2	3	0	1	0	0	0	15
1:15 PM	1	4	0	0	2	0	1	0	0	0	0	0	8
1:30 PM	1	2	0	0	3	0	2	0	1	0	0	0	9
1:45 PM	0	3	0	0	0	0	3	0	0	0	0	0	6
TOTAL VOLUMES :	14	62	0	0	49	12	24	0	12	1	0	0	174
APPROACH %'s :	18.42%	81.58%	0.00%	0.00%	80.33%	19.67%	66.67%	0.00%	33.33%	100.00%	0.00%	0.00%	
PEAK HR START TIME :	1115 AM												TOTAL
PEAK HR VOL :	4	16	0	0	10	2	5	0	2	0	0	0	39
PEAK HR FACTOR :	0.833			0.500			0.583			0.000			0.960

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

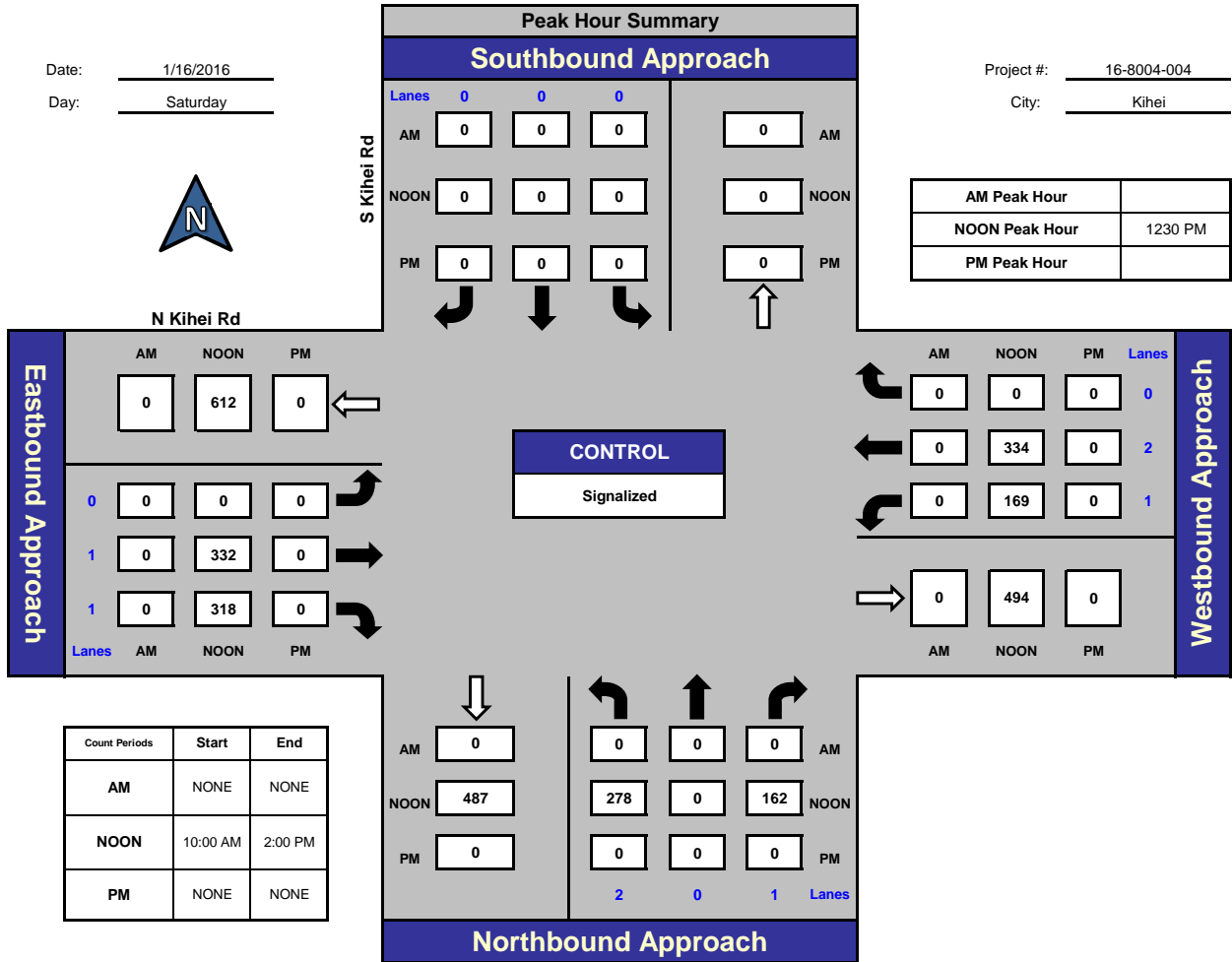
S Kihei Rd and N Kihei Rd, Kihei

Date: 1/16/2016

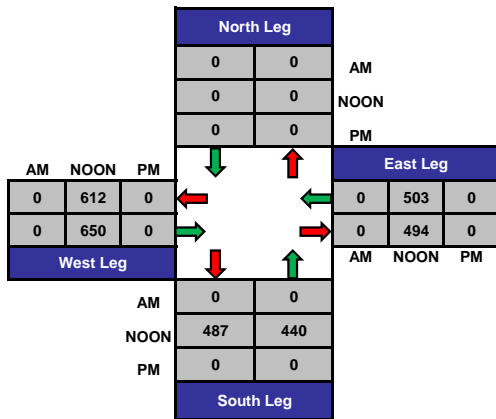
Day: Saturday

Project #: 16-8004-004

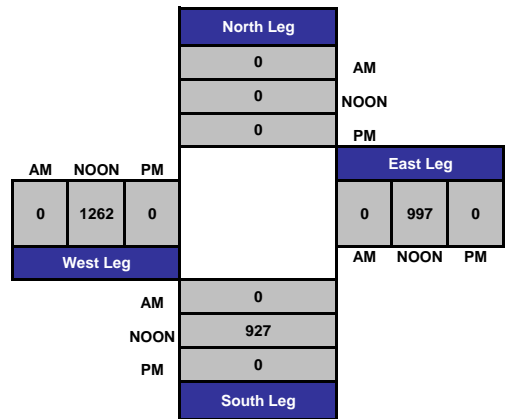
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-004

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NOON

NS/EW Streets:	S Kihei Rd		S Kihei Rd			N Kihei Rd			N Kihei Rd			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	0	1	0	0	0	0	1	1	1	2	0	
10:00 AM	63	0	47	0	0	0	0	58	56	41	90	0	
10:15 AM	76	0	43	0	0	0	0	66	63	33	72	0	
10:30 AM	73	0	43	0	0	0	0	69	79	32	76	0	
10:45 AM	62	0	49	0	0	0	0	63	50	36	73	0	
11:00 AM	72	0	50	0	0	0	0	67	55	37	79	0	
11:15 AM	75	0	46	0	0	0	0	68	75	42	85	0	
11:30 AM	68	0	49	0	0	0	0	88	58	45	72	0	
11:45 AM	55	0	46	0	0	0	0	54	61	39	95	0	
12:00 PM	48	0	54	0	0	0	0	75	72	39	86	0	
12:15 PM	57	0	28	0	0	0	0	71	83	47	82	0	
12:30 PM	78	0	37	0	0	0	0	88	75	44	91	0	
12:45 PM	63	0	37	0	0	0	0	90	82	45	88	0	
1:00 PM	78	0	43	0	0	0	0	69	75	44	81	0	
1:15 PM	59	0	45	0	0	0	0	85	86	36	74	0	
1:30 PM	58	0	33	0	0	0	0	74	80	42	73	0	
1:45 PM	61	0	35	0	0	0	0	62	94	58	68	0	
TOTAL VOLUMES :	1046	0	685	0	0	0	0	1147	1144	660	1285	0	
APPROACH %'s :	60.43%	0.00%	39.57%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	50.07%	49.93%	33.93%	66.07%	0.00%	
PEAK HR START TIME :	1230 PM												
PEAK HR VOL :	278	0	162	0	0	0	0	332	318	169	334	0	
PEAK HR FACTOR :	0.909			0.000			0.945			0.931			0.964

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-004

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	S Kihei Rd			S Kihei Rd			N Kihei Rd			N Kihei Rd			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	0	1	0	0	0	0	1	1	1	2	0	
10:00 AM	63	0	44	0	0	0	0	57	54	41	90	0	349
10:15 AM	76	0	43	0	0	0	0	66	62	33	71	0	351
10:30 AM	72	0	42	0	0	0	0	68	78	32	74	0	366
10:45 AM	62	0	49	0	0	0	0	63	49	34	72	0	329
11:00 AM	72	0	49	0	0	0	0	64	54	36	76	0	351
11:15 AM	75	0	46	0	0	0	0	68	74	42	84	0	389
11:30 AM	66	0	47	0	0	0	0	87	58	45	69	0	372
11:45 AM	55	0	45	0	0	0	0	53	61	38	95	0	347
12:00 PM	48	0	51	0	0	0	0	74	71	39	86	0	369
12:15 PM	57	0	28	0	0	0	0	71	81	47	79	0	363
12:30 PM	76	0	35	0	0	0	0	88	74	44	89	0	406
12:45 PM	63	0	35	0	0	0	0	87	81	44	88	0	398
1:00 PM	78	0	42	0	0	0	0	68	74	43	80	0	385
1:15 PM	59	0	45	0	0	0	0	84	86	36	73	0	383
1:30 PM	56	0	32	0	0	0	0	72	80	42	72	0	354
1:45 PM	61	0	34	0	0	0	0	60	93	57	68	0	373
TOTAL VOLUMES :	1039	0	667	0	0	0	0	1130	1130	653	1266	0	5885
APPROACH %'s :	60.90%	0.00%	39.10%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	50.00%	50.00%	34.03%	65.97%	0.00%	
PEAK HR START TIME :	1230 PM												TOTAL
PEAK HR VOL :	276	0	157	0	0	0	0	327	315	167	330	0	1572
PEAK HR FACTOR :	0.902			0.000			0.944			0.934			0.968

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-004

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NS/EW Streets:	NOON												TOTAL
	S Kihei Rd			S Kihei Rd			N Kihei Rd			N Kihei Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
10:00 AM	0	0	3	0	0	0	0	1	2	0	0	0	6
10:15 AM	0	0	0	0	0	0	0	0	1	0	1	0	2
10:30 AM	1	0	1	0	0	0	0	1	1	0	2	0	6
10:45 AM	0	0	0	0	0	0	0	0	1	2	1	0	4
11:00 AM	0	0	1	0	0	0	0	3	1	1	3	0	9
11:15 AM	0	0	0	0	0	0	0	0	1	0	1	0	2
11:30 AM	2	0	2	0	0	0	0	1	0	0	3	0	8
11:45 AM	0	0	1	0	0	0	0	1	0	1	0	0	3
12:00 PM	0	0	3	0	0	0	0	1	1	0	0	0	5
12:15 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
12:30 PM	2	0	2	0	0	0	0	0	1	0	2	0	7
12:45 PM	0	0	2	0	0	0	0	3	1	1	0	0	7
1:00 PM	0	0	1	0	0	0	0	1	1	1	1	0	5
1:15 PM	0	0	0	0	0	0	0	1	0	0	1	0	2
1:30 PM	2	0	1	0	0	0	0	2	0	0	1	0	6
1:45 PM	0	0	1	0	0	0	0	2	1	1	0	0	5
TOTAL VOLUMES :	7	0	18	0	0	0	0	17	14	7	19	0	82
APPROACH %'s :	28.00%	0.00%	72.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	54.84%	45.16%	26.92%	73.08%	0.00%	
PEAK HR START TIME :	1230 PM												TOTAL
PEAK HR VOL :	2	0	5	0	0	0	0	5	3	2	4	0	21
PEAK HR FACTOR :	0.438			0.000			0.500			0.750			0.968

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

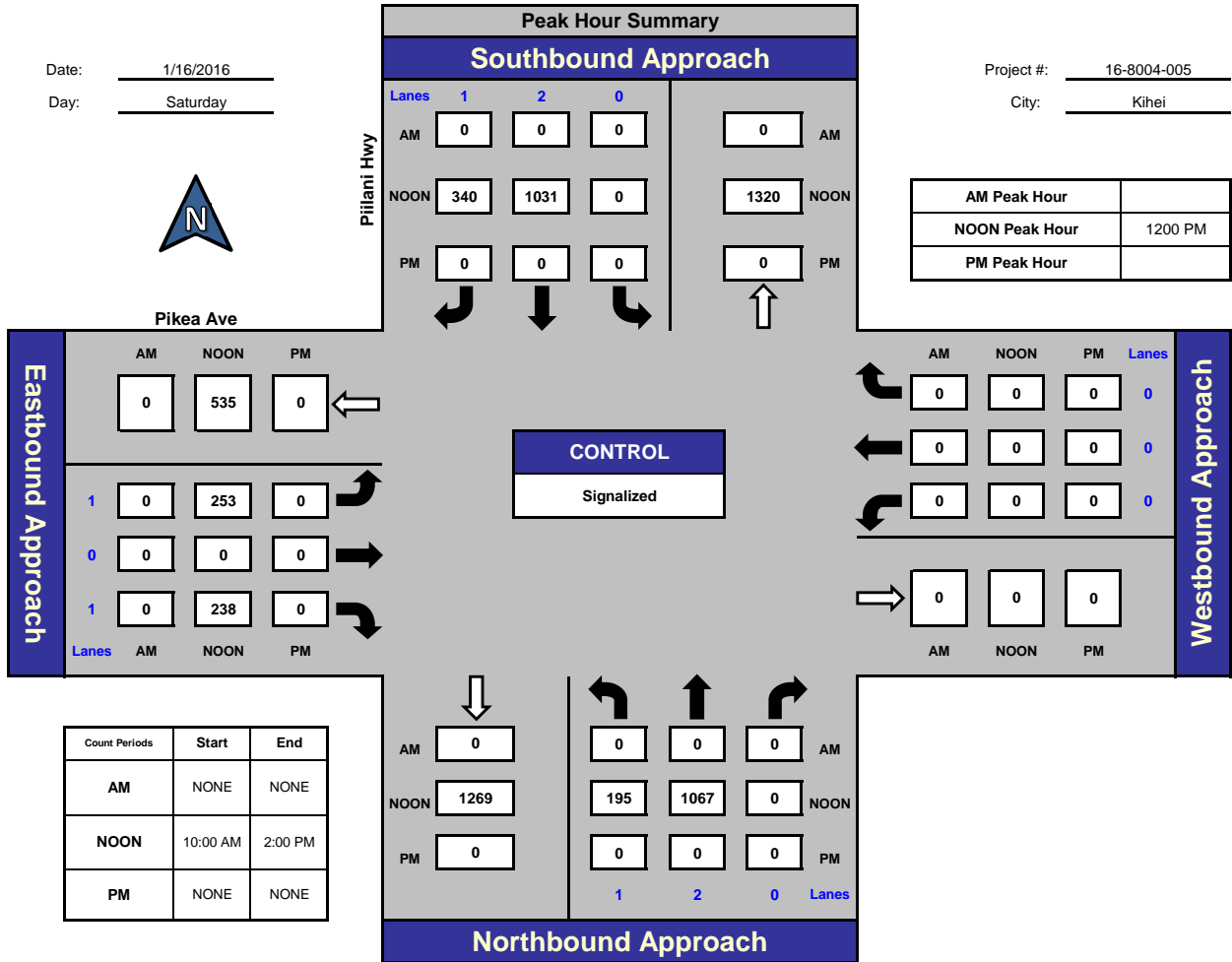
Piilani Hwy and Pikea Ave, Kihei

Date: 1/16/2016

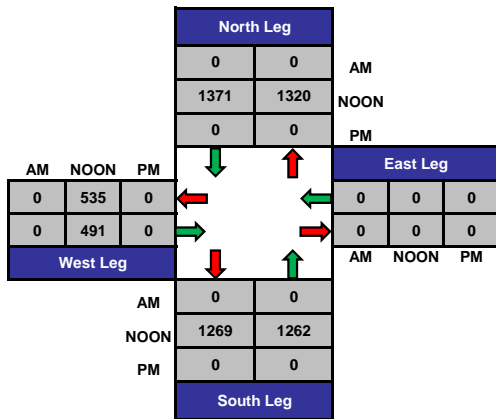
Day: Saturday

Project #: 16-8004-005

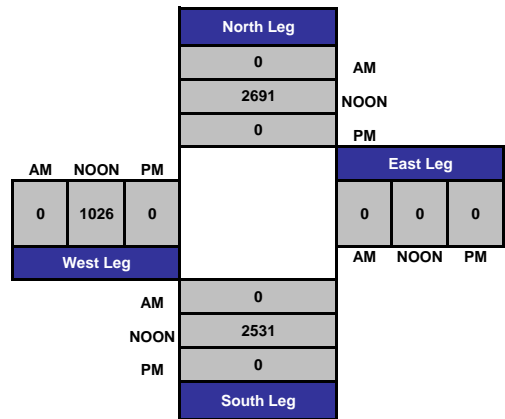
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-005

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Pilihi Hwy		Pilihi Hwy			Pikea Ave			Pikea Ave			TOTAL				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR				
	1	2	0	0	2	1	1	0	1	0	0	0				
10:00 AM	0	0	0	0	4	0	0	0	0	0	0	0	4			
10:15 AM	0	2	0	0	4	0	0	0	0	0	0	0	6			
10:30 AM	0	8	0	0	4	0	1	0	0	0	0	0	13			
10:45 AM	0	2	0	0	7	0	0	0	0	0	0	0	9			
11:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	3			
11:15 AM	0	4	0	0	2	0	1	0	0	0	0	0	7			
11:30 AM	0	1	0	0	3	0	0	0	1	0	0	0	5			
11:45 AM	0	3	0	0	3	0	2	0	0	0	0	0	8			
12:00 PM	1	4	0	0	1	0	0	0	0	0	0	0	6			
12:15 PM	0	5	0	0	0	0	3	0	0	0	0	0	8			
12:30 PM	0	5	0	0	0	2	2	0	0	0	0	0	9			
12:45 PM	0	4	0	0	4	0	0	0	0	0	0	0	8			
1:00 PM	1	1	0	0	4	0	1	0	0	0	0	0	7			
1:15 PM	1	2	0	0	1	0	1	0	0	0	0	0	5			
1:30 PM	0	3	0	0	6	0	0	0	0	0	0	0	9			
1:45 PM	0	1	0	0	2	0	0	0	0	0	0	0	3			
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL			
APPROACH %'s :	3	47	0	0	45	3	11	0	1	0	0	0	110			
	6.00%	94.00%	0.00%	0.00%	93.75%	6.25%	91.67%	0.00%	8.33%	#DIV/0!	#DIV/0!	#DIV/0!				
PEAK HR START TIME :	1200 PM												TOTAL			
PEAK HR VOL :	1	18	0	0	5	2	5	0	0	0	0	0	31			
PEAK HR FACTOR :	0.950												0.438	0.417	0.000	0.980

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

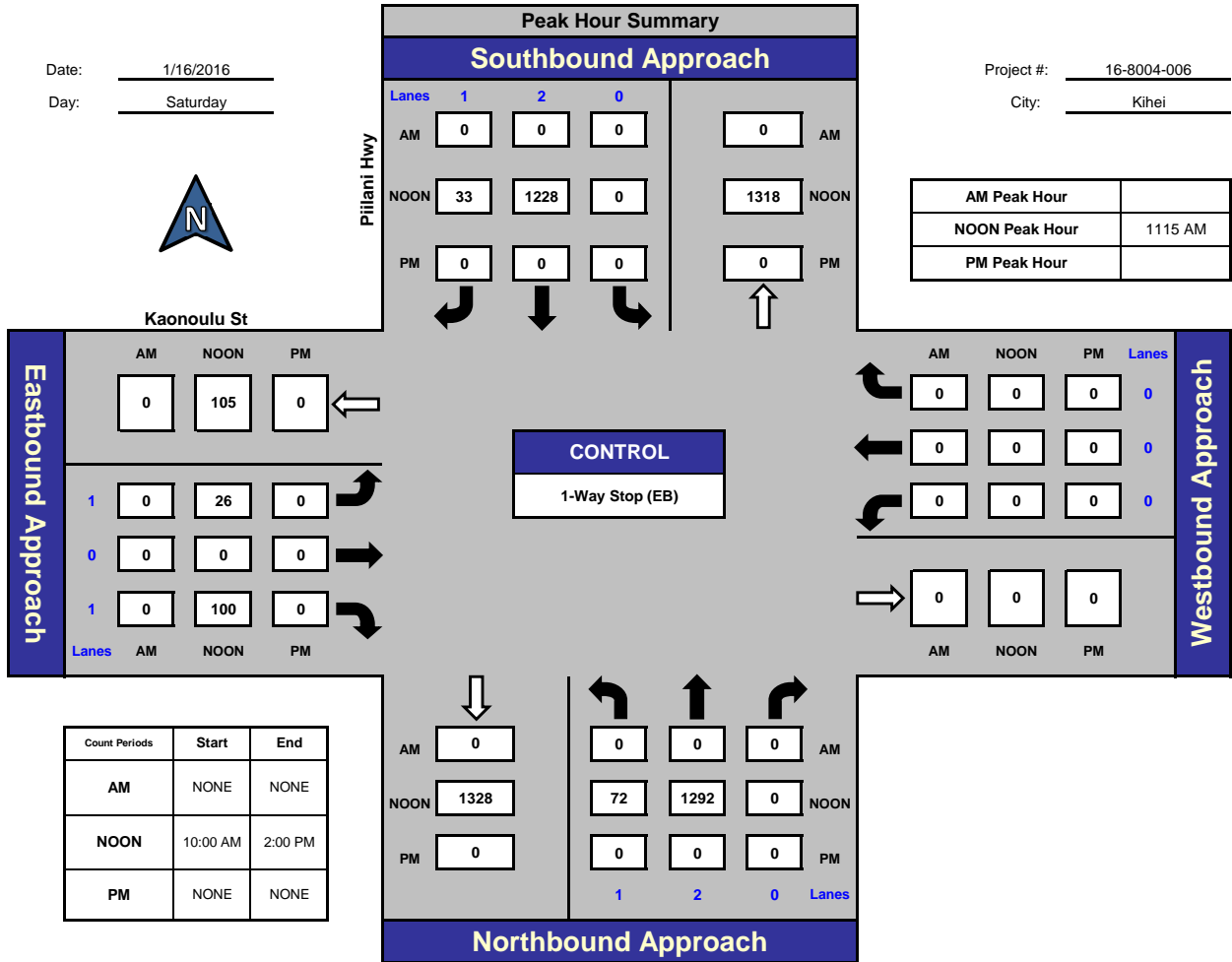
Piilani Hwy and Kaonoulu St., Kihei

Date: 1/16/2016

Day: Saturday

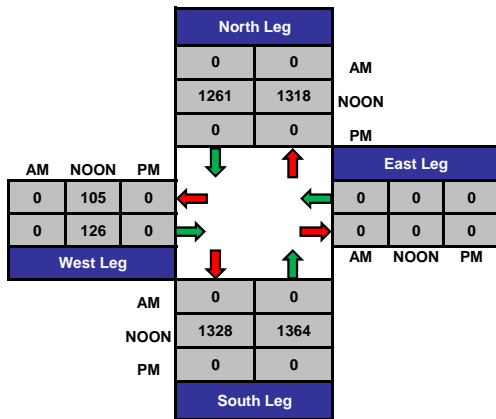
Project #: 16-8004-006

City: Kihei

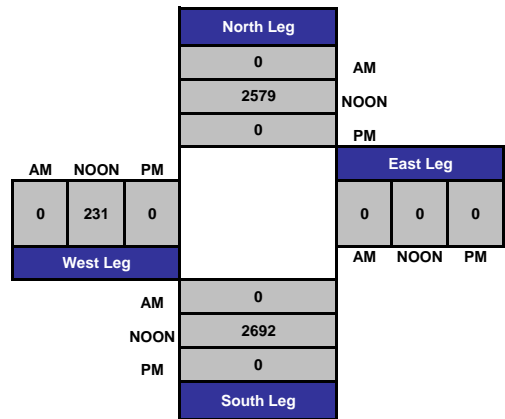


Count Periods	Start	End
AM	NONE	NONE
NOON	10:00 AM	2:00 PM
PM	NONE	NONE

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-006

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NOON

NS/EW Streets:	Pillani Hwy			Pillani Hwy			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
10:00 AM	11	337	0	0	240	6	10	0	29	0	0	0	633
10:15 AM	11	318	0	0	294	11	6	0	28	0	0	0	668
10:30 AM	17	309	0	0	290	9	10	0	30	0	0	0	665
10:45 AM	13	313	0	0	296	2	8	0	24	0	0	0	656
11:00 AM	20	353	0	0	248	12	10	0	27	0	0	0	670
11:15 AM	19	337	0	0	301	14	4	0	34	0	0	0	709
11:30 AM	17	288	0	0	314	10	10	0	20	0	0	0	659
11:45 AM	16	339	0	0	309	3	7	0	25	0	0	0	699
12:00 PM	20	328	0	0	304	6	5	0	21	0	0	0	684
12:15 PM	14	296	0	0	299	11	2	0	27	0	0	0	649
12:30 PM	7	295	0	0	324	3	8	0	26	0	0	0	663
12:45 PM	14	294	0	0	348	10	2	0	27	0	0	0	695
1:00 PM	19	299	0	0	311	12	6	0	15	0	0	0	662
1:15 PM	17	302	0	0	320	5	4	0	31	0	0	0	679
1:30 PM	13	266	0	0	339	10	5	0	27	0	0	0	660
1:45 PM	16	290	0	0	315	4	5	0	17	0	0	0	647
TOTAL VOLUMES :	244	4964	0	0	4852	128	102	0	408	0	0	0	10698
APPROACH %'s :	4.69%	95.31%	0.00%	0.00%	97.43%	2.57%	20.00%	0.00%	80.00%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	1115 AM												TOTAL
PEAK HR VOL :	72	1292	0	0	1228	33	26	0	100	0	0	0	2751
PEAK HR FACTOR :	0.958												0.970
	0.973												0.829
													0.000

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-006

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	Piliāni Hwy			Piliāni Hwy			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 1	EL 1	ET 0	ER 1	WL 0	WT 0	WR 0	
10:00 AM	11	337	0	0	236	6	10	0	29	0	0	0	629
10:15 AM	11	316	0	0	289	11	6	0	28	0	0	0	661
10:30 AM	17	301	0	0	287	9	10	0	30	0	0	0	654
10:45 AM	13	307	0	0	290	2	8	0	24	0	0	0	644
11:00 AM	20	351	0	0	245	12	10	0	27	0	0	0	665
11:15 AM	19	333	0	0	297	14	4	0	34	0	0	0	701
11:30 AM	17	286	0	0	310	10	10	0	20	0	0	0	653
11:45 AM	15	333	0	0	306	3	7	0	25	0	0	0	689
12:00 PM	20	324	0	0	301	6	5	0	21	0	0	0	677
12:15 PM	14	288	0	0	297	11	2	0	27	0	0	0	639
12:30 PM	7	287	0	0	321	3	8	0	25	0	0	0	651
12:45 PM	14	288	0	0	344	10	2	0	27	0	0	0	685
1:00 PM	19	296	0	0	306	12	6	0	15	0	0	0	654
1:15 PM	17	299	0	0	318	5	4	0	31	0	0	0	674
1:30 PM	13	265	0	0	336	10	5	0	27	0	0	0	656
1:45 PM	16	287	0	0	312	4	5	0	17	0	0	0	641
TOTAL VOLUMES :	243	4898	0	0	4795	128	102	0	407	0	0	0	10573
APPROACH %'s :	4.73%	95.27%	0.00%	0.00%	97.40%	2.60%	20.04%	0.00%	79.96%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	1115 AM												TOTAL
PEAK HR VOL :	71	1276	0	0	1214	33	26	0	100	0	0	0	2720
PEAK HR FACTOR :	0.957												0.970

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-006

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Piihoni Hwy		Piihoni Hwy			Kaonolu St			Kaonolu St			TOTAL				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR				
	1	2	0	0	2	1	1	0	1	0	0	0				
10:00 AM	0	0	0	0	4	0	0	0	0	0	0	0	4			
10:15 AM	0	2	0	0	5	0	0	0	0	0	0	0	7			
10:30 AM	0	8	0	0	3	0	0	0	0	0	0	0	11			
10:45 AM	0	6	0	0	6	0	0	0	0	0	0	0	12			
11:00 AM	0	2	0	0	3	0	0	0	0	0	0	0	5			
11:15 AM	0	4	0	0	4	0	0	0	0	0	0	0	8			
11:30 AM	0	2	0	0	4	0	0	0	0	0	0	0	6			
11:45 AM	1	6	0	0	3	0	0	0	0	0	0	0	10			
12:00 PM	0	4	0	0	3	0	0	0	0	0	0	0	7			
12:15 PM	0	8	0	0	2	0	0	0	0	0	0	0	10			
12:30 PM	0	8	0	0	3	0	0	0	1	0	0	0	12			
12:45 PM	0	6	0	0	4	0	0	0	0	0	0	0	10			
1:00 PM	0	3	0	0	5	0	0	0	0	0	0	0	8			
1:15 PM	0	3	0	0	2	0	0	0	0	0	0	0	5			
1:30 PM	0	1	0	0	3	0	0	0	0	0	0	0	4			
1:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	6			
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL			
APPROACH %'s :	1	66	0	0	57	0	0	0	1	#DIV/0!	#DIV/0!	#DIV/0!	125			
	1.49%	98.51%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%							
PEAK HR START TIME :	1115 AM												TOTAL			
PEAK HR VOL :	1	16	0	0	14	0	0	0	0	0	0	0	31			
PEAK HR FACTOR :	0.607												0.875	0.000	0.000	0.970

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (EB)

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

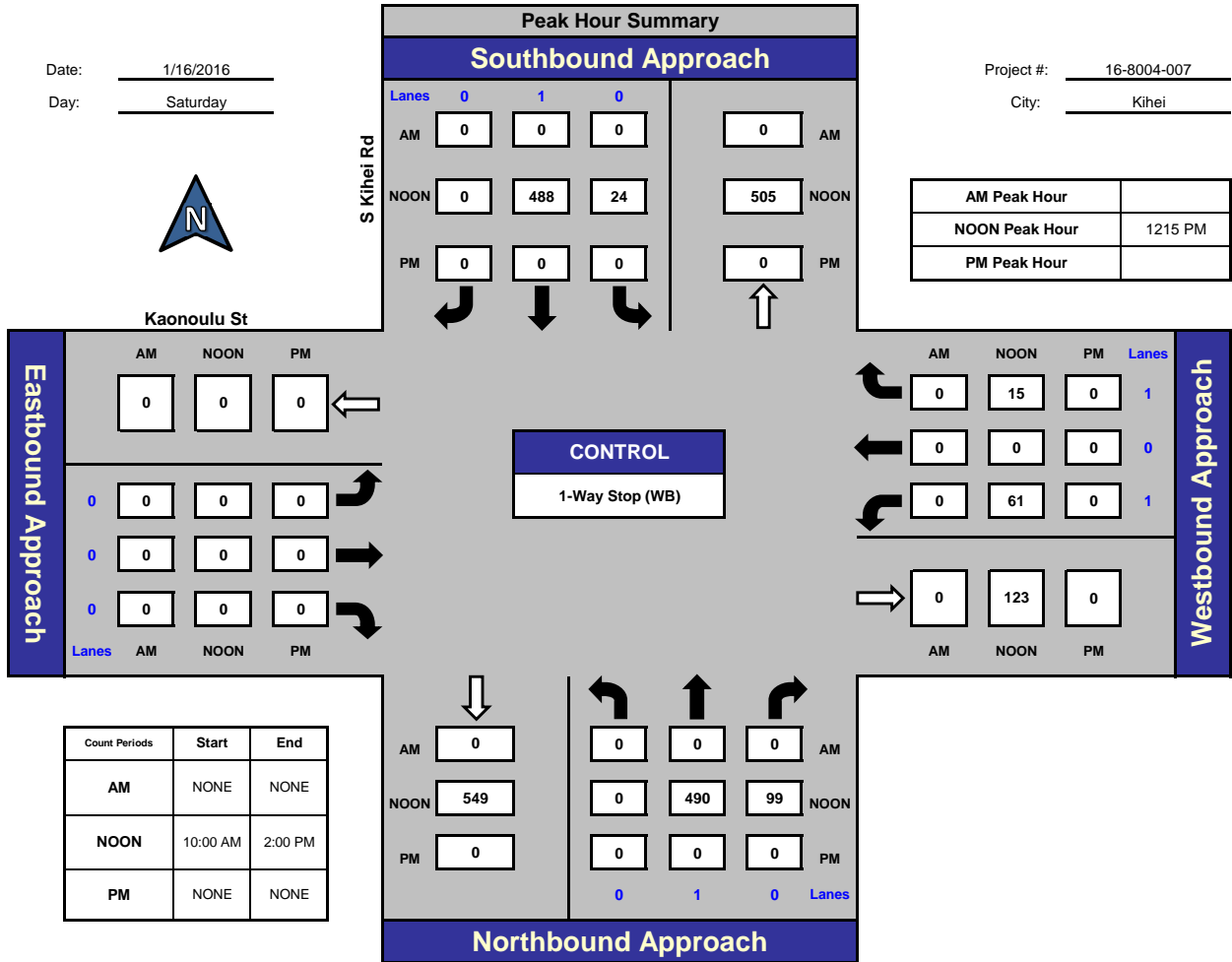
S Kihei Rd and Kaonoulu St, Kihei

Date: 1/16/2016

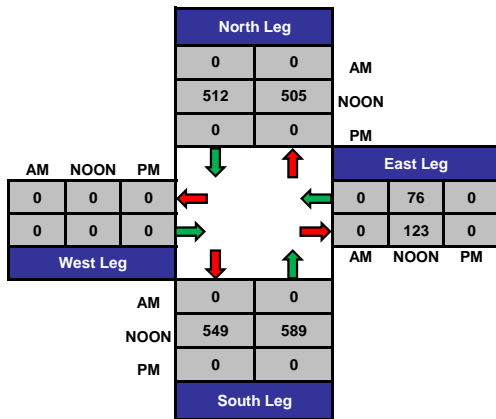
Day: Saturday

Project #: 16-8004-007

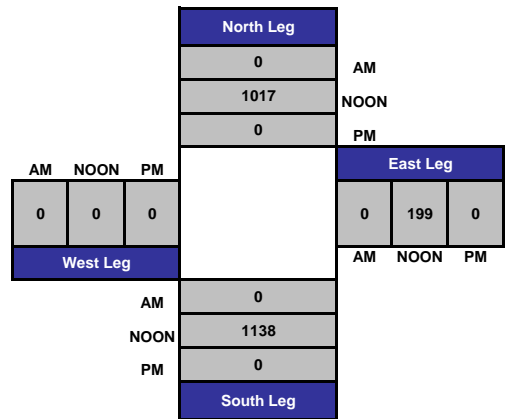
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-007

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NS/EW Streets:	NOON												TOTAL
	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	0	0	0	1	0	1	
10:00 AM	0	132	18	5	94	0	0	0	0	18	0	4	271
10:15 AM	0	126	31	5	99	0	0	0	0	16	0	7	284
10:30 AM	0	124	19	7	129	0	0	0	0	23	0	7	309
10:45 AM	0	138	25	6	107	0	0	0	0	14	0	5	295
11:00 AM	0	121	28	2	89	0	0	0	0	15	0	2	257
11:15 AM	0	139	23	5	126	0	0	0	0	17	0	3	313
11:30 AM	0	138	24	6	106	0	0	0	0	14	0	10	298
11:45 AM	0	108	27	5	93	0	0	0	0	12	0	7	252
12:00 PM	0	123	23	0	97	0	0	0	0	12	0	2	257
12:15 PM	0	118	25	6	126	0	0	0	0	18	0	3	296
12:30 PM	0	122	18	8	102	0	0	0	0	18	0	1	269
12:45 PM	0	130	28	6	137	0	0	0	0	12	0	6	319
1:00 PM	0	120	28	4	123	0	0	0	0	13	0	5	293
1:15 PM	0	121	17	4	105	0	0	0	0	11	0	4	262
1:30 PM	0	114	16	5	111	0	0	0	0	12	0	1	259
1:45 PM	0	119	21	2	111	0	0	0	0	14	0	2	269
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	1993	371	76	1755	0	0	0	0	239	0	69	4503
	0.00%	84.31%	15.69%	4.15%	95.85%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	77.60%	0.00%	22.40%	
PEAK HR START TIME :	1215 PM												TOTAL
PEAK HR VOL :	0	490	99	24	488	0	0	0	0	61	0	15	1177
PEAK HR FACTOR :	0.932		0.895			0.000			0.905			0.922	

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-007

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	0	0	1	0	1	
10:00 AM	0	132	18	4	94	0	0	0	0	18	0	4	270
10:15 AM	0	125	31	5	97	0	0	0	0	16	0	7	281
10:30 AM	0	120	19	7	129	0	0	0	0	23	0	7	305
10:45 AM	0	137	25	5	105	0	0	0	0	14	0	5	291
11:00 AM	0	121	28	2	89	0	0	0	0	15	0	2	257
11:15 AM	0	136	23	5	122	0	0	0	0	16	0	3	305
11:30 AM	0	136	24	6	106	0	0	0	0	14	0	10	296
11:45 AM	0	106	27	5	91	0	0	0	0	12	0	7	248
12:00 PM	0	122	23	0	97	0	0	0	0	12	0	2	256
12:15 PM	0	118	25	6	124	0	0	0	0	18	0	3	294
12:30 PM	0	119	18	8	101	0	0	0	0	18	0	1	265
12:45 PM	0	127	28	6	135	0	0	0	0	11	0	6	313
1:00 PM	0	120	28	4	122	0	0	0	0	13	0	5	292
1:15 PM	0	120	17	4	104	0	0	0	0	10	0	4	259
1:30 PM	0	111	16	5	111	0	0	0	0	12	0	1	256
1:45 PM	0	117	21	2	109	0	0	0	0	14	0	2	265
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	1967	371	74	1736	0	0	0	0	236	0	69	4453
	0.00%	84.13%	15.87%	4.09%	95.91%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	77.38%	0.00%	22.62%	
PEAK HR START TIME :	1215 PM												TOTAL
PEAK HR VOL :	0	484	99	24	482	0	0	0	0	60	0	15	1164
PEAK HR FACTOR :	0.940			0.897			0.000			0.893			0.930

UTURNS			
NB	SB	EB	WB
0	0	0	0

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (WB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-007

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NS/EW Streets:	NOON												TOTAL
	S Kihei Rd			S Kihei Rd			Kaonoulu St			Kaonoulu St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
10:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
10:15 AM	0	1	0	0	2	0	0	0	0	0	0	0	3
10:30 AM	0	4	0	0	0	0	0	0	0	0	0	0	4
10:45 AM	0	1	0	1	2	0	0	0	0	0	0	0	4
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	3	0	0	4	0	0	0	0	1	0	0	8
11:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	2	0	0	2	0	0	0	0	0	0	0	4
12:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
12:30 PM	0	3	0	0	1	0	0	0	0	0	0	0	4
12:45 PM	0	3	0	0	2	0	0	0	0	1	0	0	6
1:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
1:15 PM	0	1	0	0	1	0	0	0	0	1	0	0	3
1:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
1:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	4
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	26	0	2	19	0	0	0	0	3	0	0	50
	0.00%	100.00%	0.00%	9.52%	90.48%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	
PEAK HR START TIME :	1215 PM												TOTAL
PEAK HR VOL :	0	6	0	0	6	0	0	0	0	1	0	0	13
PEAK HR FACTOR :	0.500			0.750			0.000			0.250			0.930

CONTROL : 1-Way Stop (WB)

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

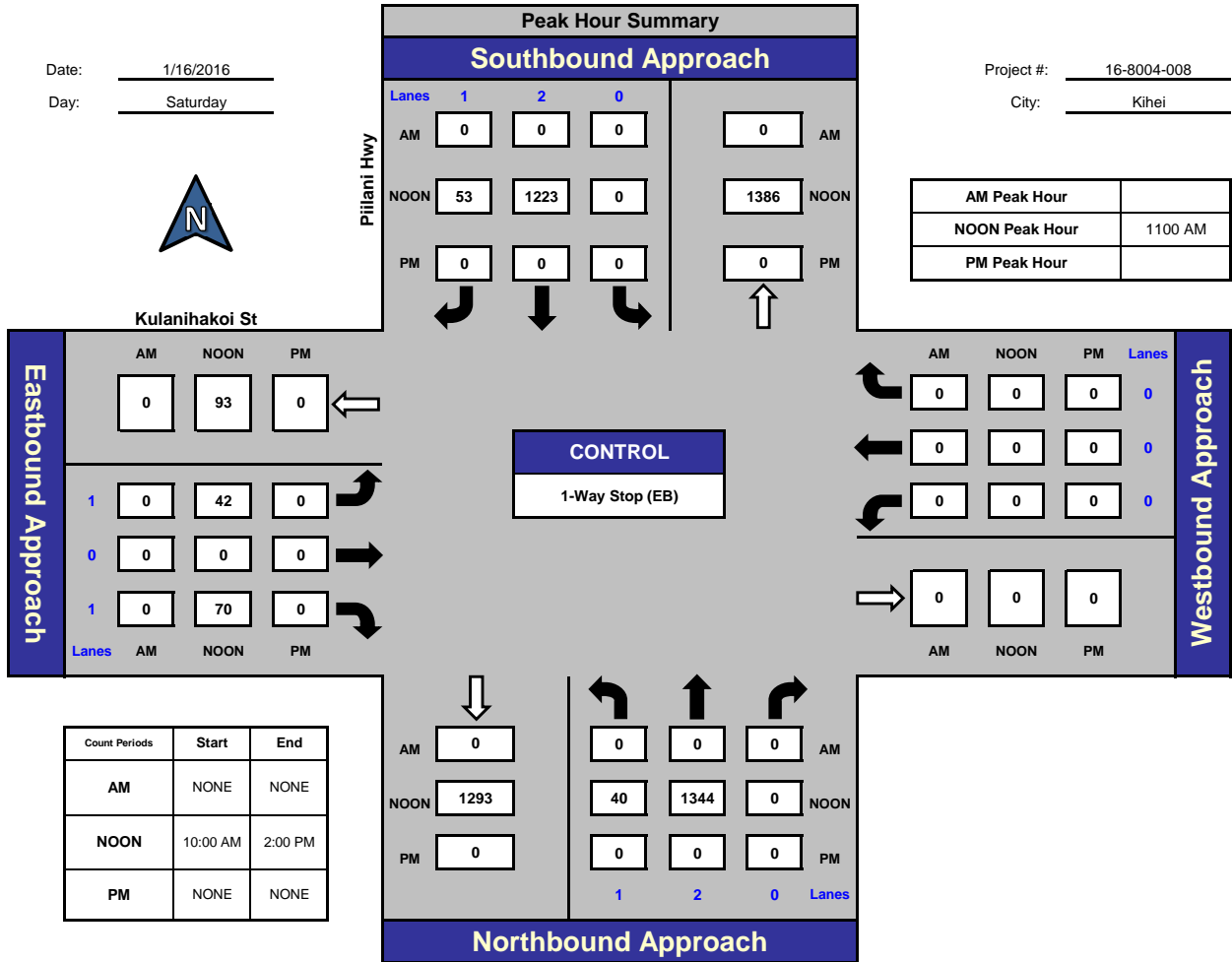
Piilani Hwy and Kulanihako St, Kihei

Date: 1/16/2016

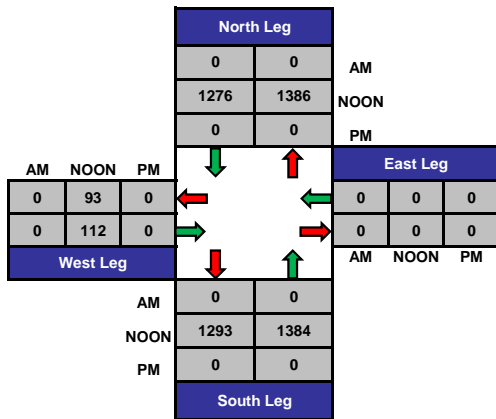
Day: Saturday

Project #: 16-8004-008

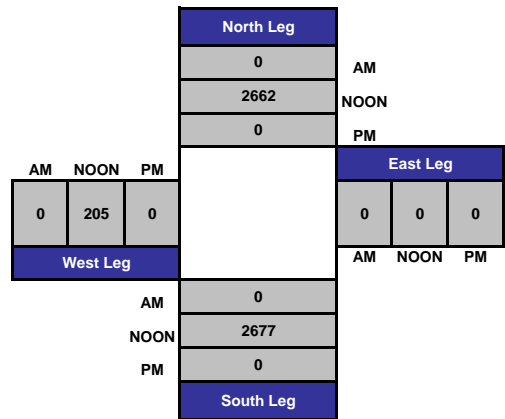
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-008

Day: Saturday

City: Kihei

TOTALS

Date: 1/16/2016

NOON

NS/EW Streets:	Pilihi Hwy		Pilihi Hwy			Kulanihako St			Kulanihako St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	0	0	2	1	1	0	1	0	0	0	
10:00 AM	12	347	0	0	270	9	11	0	14	1	0	0	664
10:15 AM	5	318	0	0	294	12	15	0	22	0	0	1	667
10:30 AM	7	315	0	0	318	9	5	0	22	0	0	0	676
10:45 AM	18	316	0	0	303	14	7	0	18	0	0	0	676
11:00 AM	10	372	0	0	259	15	10	0	23	0	0	0	689
11:15 AM	13	344	0	0	325	12	7	0	20	0	0	0	721
11:30 AM	6	277	0	0	311	13	13	0	13	0	0	0	633
11:45 AM	11	351	0	0	328	13	12	0	14	0	0	0	729
12:00 PM	7	313	0	0	307	10	11	0	19	0	0	0	667
12:15 PM	20	313	0	0	324	8	4	0	17	0	0	0	686
12:30 PM	10	297	0	1	332	10	10	0	20	0	0	0	680
12:45 PM	13	306	0	0	369	16	10	0	15	0	0	0	729
1:00 PM	14	302	0	0	312	5	9	0	20	0	0	0	662
1:15 PM	8	307	0	0	340	15	6	0	8	0	0	0	684
1:30 PM	4	276	0	0	349	17	8	0	19	0	0	1	674
1:45 PM	14	298	0	0	319	9	7	0	22	0	0	0	669
TOTAL VOLUMES :	172	5052	0	1	5060	187	145	0	286	1	0	2	10906
APPROACH %'s :	3.29%	96.71%	0.00%	0.02%	96.42%	3.56%	33.64%	0.00%	66.36%	33.33%	0.00%	66.67%	
PEAK HR START TIME :	1100 AM												TOTAL
PEAK HR VOL :	40	1344	0	0	1223	53	42	0	70	0	0	0	2772
PEAK HR FACTOR :	0.906												0.951
	0.935												0.848
													0.000

UTURNS			
NB	SB	EB	WB
2	0		
0	0		
0	0		
1	0		
0	0		
1	0		
1	0		
0	0		
0	0		
1	1		
0	0		
0	0		
0	0		
0	0		
0	0		
0	0		
0	0		
7	1	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-008

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	Pilihi Hwy		Pilihi Hwy			Kulanihako St			Kulanihako St			TOTAL				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR				
	1	2	0	0	2	1	1	0	1	0	0	0				
10:00 AM	12	346	0	0	268	9	11	0	14	0	0	0	660			
10:15 AM	5	315	0	0	288	11	15	0	22	0	0	0	656			
10:30 AM	7	308	0	0	313	9	5	0	22	0	0	0	664			
10:45 AM	18	312	0	0	295	14	7	0	18	0	0	0	664			
11:00 AM	10	369	0	0	254	15	10	0	23	0	0	0	681			
11:15 AM	13	339	0	0	320	12	7	0	20	0	0	0	711			
11:30 AM	6	276	0	0	308	13	13	0	13	0	0	0	629			
11:45 AM	10	347	0	0	325	13	12	0	14	0	0	0	721			
12:00 PM	7	307	0	0	307	10	11	0	19	0	0	0	661			
12:15 PM	20	304	0	0	322	8	4	0	17	0	0	0	675			
12:30 PM	10	292	0	1	329	10	10	0	20	0	0	0	672			
12:45 PM	13	301	0	0	365	16	10	0	15	0	0	0	720			
1:00 PM	13	298	0	0	307	5	9	0	20	0	0	0	652			
1:15 PM	8	304	0	0	338	15	6	0	8	0	0	0	679			
1:30 PM	4	275	0	0	346	17	8	0	19	0	0	0	669			
1:45 PM	14	295	0	0	318	9	7	0	22	0	0	0	665			
TOTAL VOLUMES :	170	4988	0	1	5003	186	145	0	286				10779			
APPROACH %'s :	3.30%	96.70%	0.00%	0.02%	96.40%	3.58%	33.64%	0.00%	66.36%	#DIV/0!	#DIV/0!	#DIV/0!				
PEAK HR START TIME :	1100 AM												TOTAL			
PEAK HR VOL :	39	1331	0	0	1207	53	42	0	70	0	0	0	2742			
PEAK HR FACTOR :	0.904												0.932	0.848	0.000	0.951

UTURNS			
NB	SB	EB	WB
2	0		
0	0		
0	0		
1	0		
1	0		
0	0		
1	0		
1	0		
0	0		
0	0		
1	1		
0	0		
0	0		
0	0		
0	0		
0	0		
0	0		
7	1	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-008

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Pillani Hwy		Pillani Hwy			Kulanihako St			Kulanihako St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	0	0	2	1	1	0	1	0	0	0	
10:00 AM	0	1	0	0	2	0	0	0	0	1	0	0	4
10:15 AM	0	3	0	0	6	1	0	0	0	0	0	1	11
10:30 AM	0	7	0	0	5	0	0	0	0	0	0	0	12
10:45 AM	0	4	0	0	8	0	0	0	0	0	0	0	12
11:00 AM	0	3	0	0	5	0	0	0	0	0	0	0	8
11:15 AM	0	5	0	0	5	0	0	0	0	0	0	0	10
11:30 AM	0	1	0	0	3	0	0	0	0	0	0	0	4
11:45 AM	1	4	0	0	3	0	0	0	0	0	0	0	8
12:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	6
12:15 PM	0	9	0	0	2	0	0	0	0	0	0	0	11
12:30 PM	0	5	0	0	3	0	0	0	0	0	0	0	8
12:45 PM	0	5	0	0	4	0	0	0	0	0	0	0	9
1:00 PM	1	4	0	0	5	0	0	0	0	0	0	0	10
1:15 PM	0	3	0	0	2	0	0	0	0	0	0	0	5
1:30 PM	0	1	0	0	3	0	0	0	0	0	0	1	5
1:45 PM	0	3	0	0	1	0	0	0	0	0	0	0	4
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	2	64	0	0	57	1	0	0	0	1	0	2	127
	3.03%	96.97%	0.00%	0.00%	98.28%	1.72%	#DIV/0!	#DIV/0!	#DIV/0!	33.33%	0.00%	66.67%	
PEAK HR START TIME :	1100 AM												TOTAL
PEAK HR VOL :	1	13	0	0	16	0	0	0	0	0	0	0	30
PEAK HR FACTOR :	0.700			0.800			0.000			0.000			0.951

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : 1-Way Stop (EB)

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

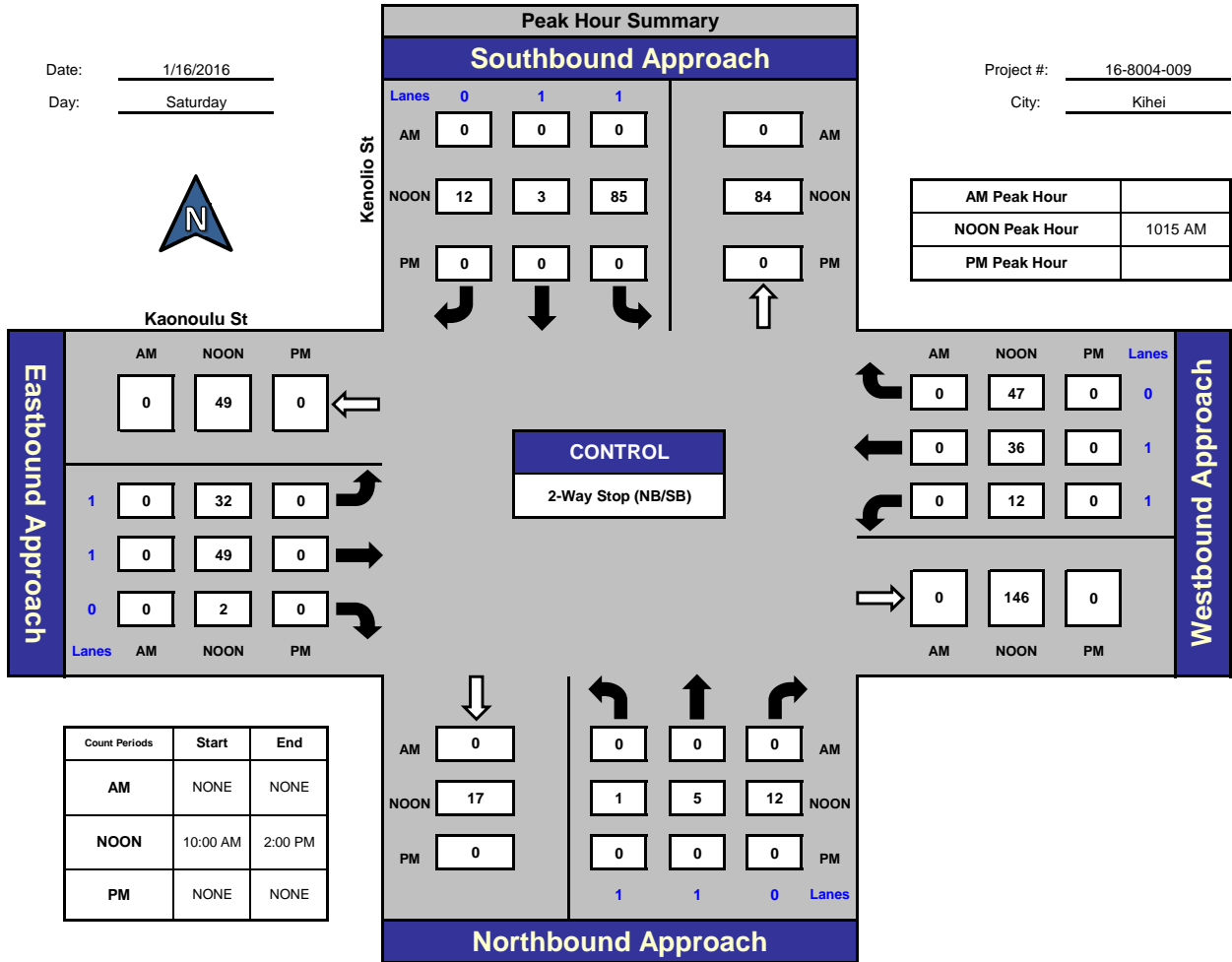
Kenolio St and Kaonoulu St, Kihei

Date: 1/16/2016

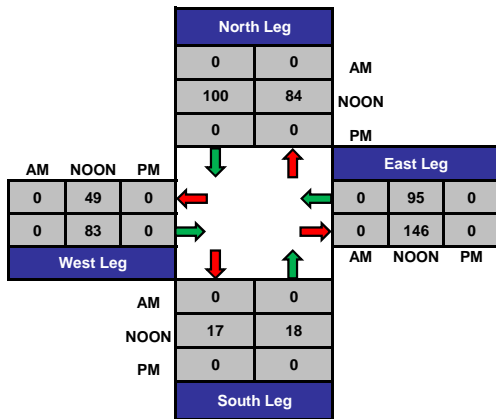
Day: Saturday

Project #: 16-8004-009

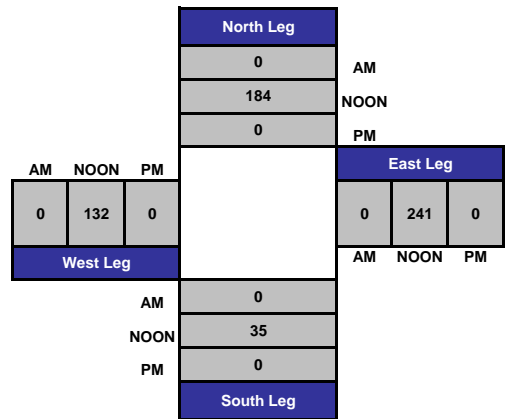
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-009

Day: Saturday

City: Kihei

Cars

Date: 1/16/2016

NOON

NS/EW Streets:	Kenolio St			Kenolio St			Kaonoulu St			Kaonoulu St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
10:00 AM	1	1	3	23	1	6	4	17	1	1	4	13	75
10:15 AM	0	1	5	20	0	4	14	10	0	1	13	8	76
10:30 AM	0	0	1	22	0	2	4	13	0	6	10	10	68
10:45 AM	1	3	2	19	2	4	6	11	2	0	5	10	65
11:00 AM	0	0	4	24	1	2	8	14	0	5	8	19	85
11:15 AM	0	0	3	19	0	3	6	11	1	2	15	15	75
11:30 AM	0	1	5	12	1	3	7	10	1	2	9	17	68
11:45 AM	0	1	5	18	1	4	5	10	1	2	4	10	61
12:00 PM	0	1	3	13	0	3	12	8	0	2	3	19	64
12:15 PM	1	1	4	20	0	1	10	11	0	3	7	14	72
12:30 PM	1	0	2	15	0	2	3	14	2	1	1	7	48
12:45 PM	1	0	2	23	0	2	12	5	2	3	7	15	72
1:00 PM	0	1	3	8	0	1	11	6	0	2	9	21	62
1:15 PM	0	2	5	24	0	3	2	8	0	2	6	15	67
1:30 PM	1	1	5	22	0	1	1	7	1	3	8	10	60
1:45 PM	0	1	3	9	0	2	3	8	0	4	5	13	48
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	8.00%	18.67%	73.33%	85.59%	1.76%	12.65%	38.30%	57.80%	3.90%	10.57%	30.89%	58.54%	1066
PEAK HR START TIME :	1015 AM												TOTAL
PEAK HR VOL :	1	4	12	85	3	12	32	48	2	12	36	47	294
PEAK HR FACTOR :	0.708			0.926			0.854			0.742			0.865

UTURNS			
NB	SB	EB	WB
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		1	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
		0	0
NB	SB	EB	WB
0	0	1	1

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-009

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Kenolio St		Kenolio St			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
1:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	2	0	0	1	0	0	1	0	0	1	0	5
	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	1015 AM												TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	1	0	0	0	0	2
PEAK HR FACTOR :	0.250			0.000			0.250			0.000			0.865

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : 2-Way Stop (NB/SB)

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

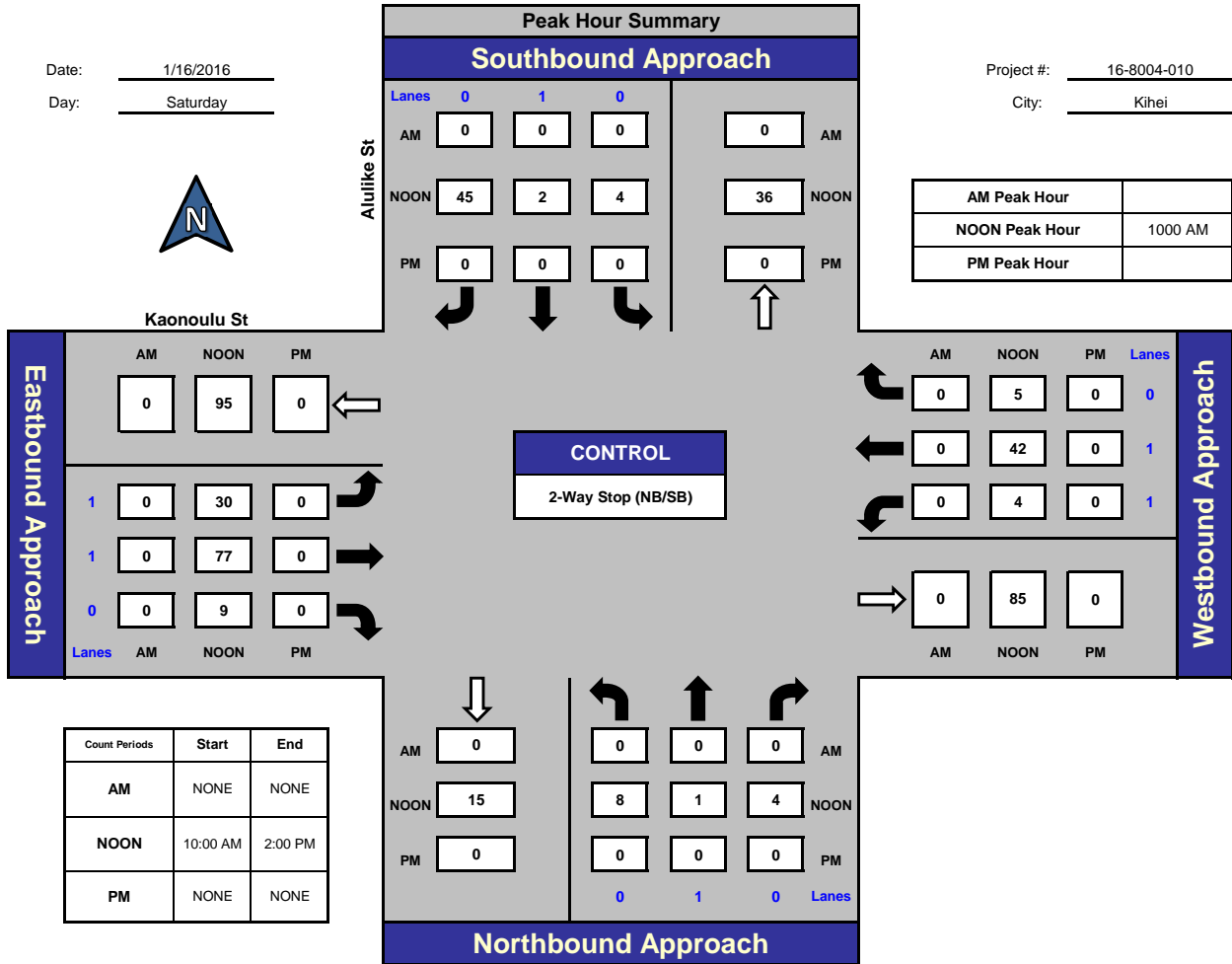
Alulike St and Kaonoulu St, Kihei

Date: 1/16/2016

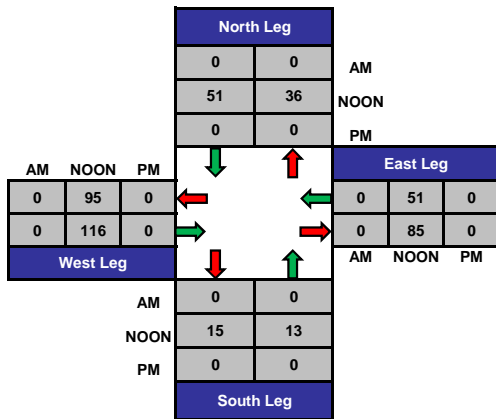
Day: Saturday

Project #: 16-8004-010

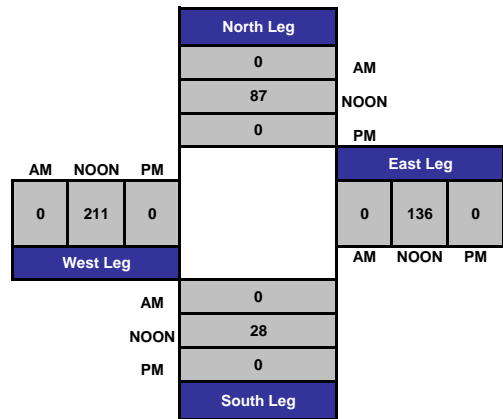
City: Kihei



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8004-010

Day: Saturday

City: Kihei

2 Axle+ Trucks

Date: 1/16/2016

NOON

NS/EW Streets:	Alulike St			Alulike St			Kaonoulu St			Kaonoulu St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
	0	1	0	0	1	0	1	1	0	1	1	0		
10:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%	100.00%	0.00%	50.00%	50.00%	0.00%	100.00%	0.00%	4	
PEAK HR START TIME :	1000 AM													TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	1	0	0	0	2	
PEAK HR FACTOR :	0.000			0.000			0.500			0.000			0.895	

UTURNS			
NB	SB	EB	WB

NB	SB	EB	WB
0	0	0	0

CONTROL : 2-Way Stop (NB/SB)

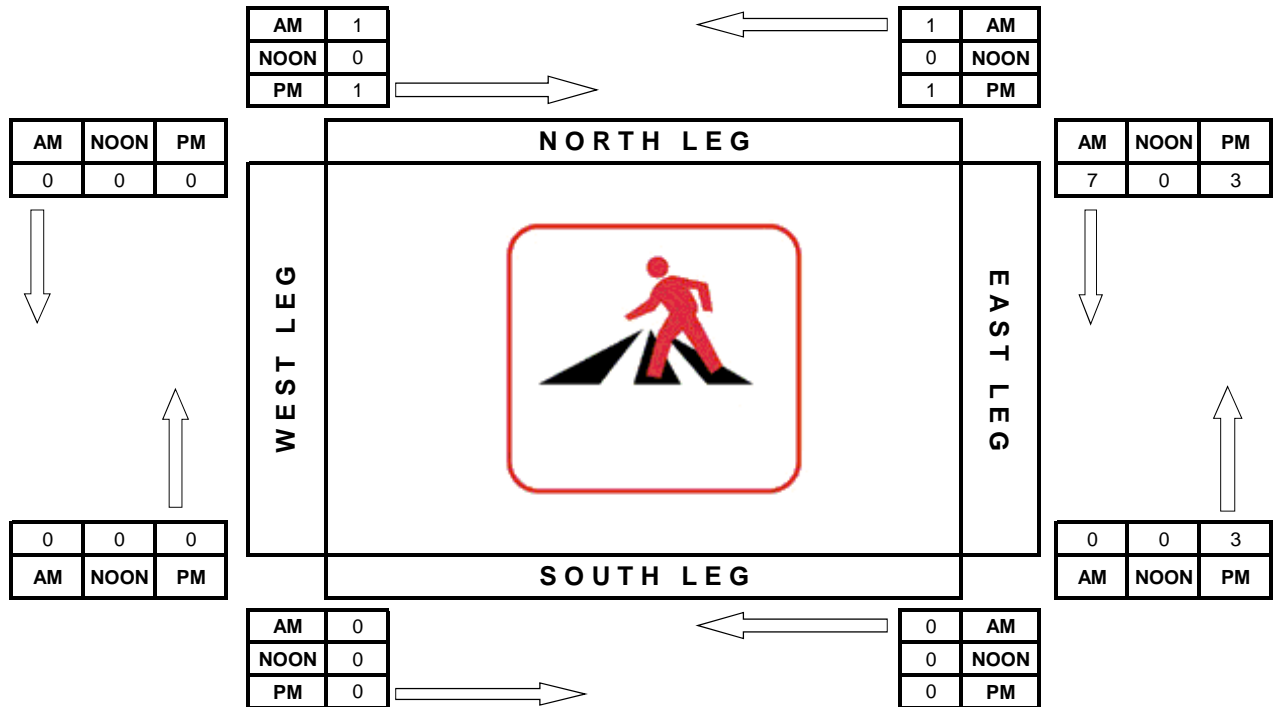
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

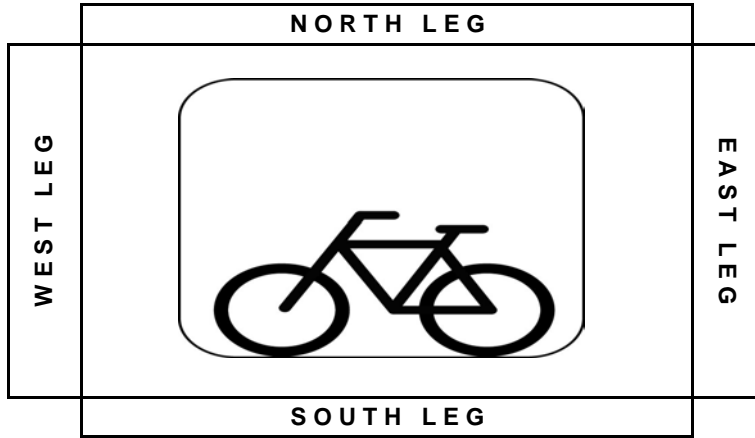
PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	0	1
NOON	0	0	0
PM	1	3	1

AM	NOON	PM
0	0	0
3	0	4
0	0	0



AM	NOON	PM
0	0	0
6	0	1
0	0	0

AM	0	0	0
NOON	0	0	0
PM	0	0	1

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	1	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	1	0	0	0
6:45 AM	0	0	0	0	0	6	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0
7:30 AM	1	1	0	0	0	0	0	0
7:45 AM	0	0	0	0	2	0	0	0
8:00 AM	0	0	0	0	1	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	1	0	0
8:45 AM	0	0	0	0	1	0	0	0
TOTALS	1	1	0	0	6	9	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	1	0	0	0
7:00 AM	0	0	0	0	0	1	0	1	0	0	3	0
7:15 AM	0	1	0	0	0	0	0	1	1	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	0	0	0	2	0	0	2	0
TOTALS	0	2	0	1	0	1	0	5	2	0	10	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	1	1	0	0
3:15 PM	0	0	0	0	1	0	0	0
3:30 PM	0	0	0	0	0	1	0	0
3:45 PM	0	0	0	0	0	1	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	1	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	0	0	1	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	3	2	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	2	1	0	0	6	6	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	2	0
3:30 PM	0	0	0	0	0	0	1	0	0	0	0	0
3:45 PM	0	0	0	1	0	1	0	1	0	0	1	0
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	2	0	0	0	0
4:30 PM	0	0	0	0	2	0	0	1	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	1	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	2	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
TOTALS	0	1	1	1	4	2	1	8	0	0	3	0

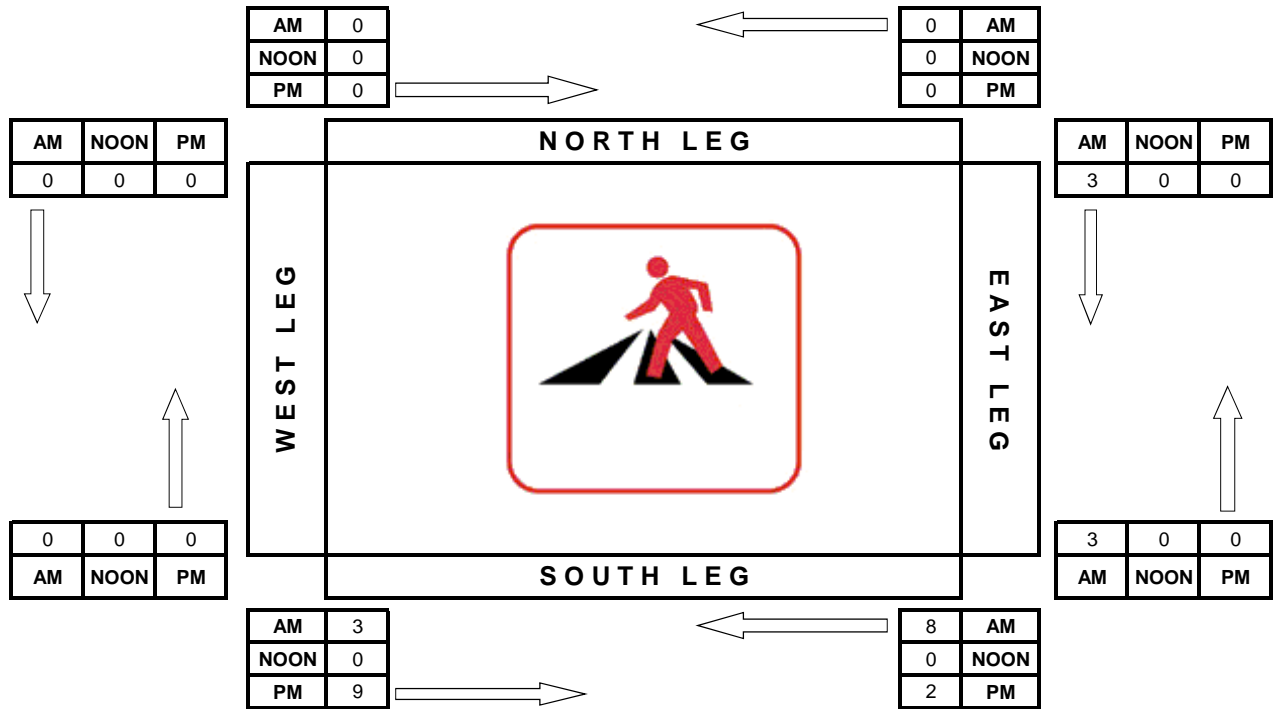
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

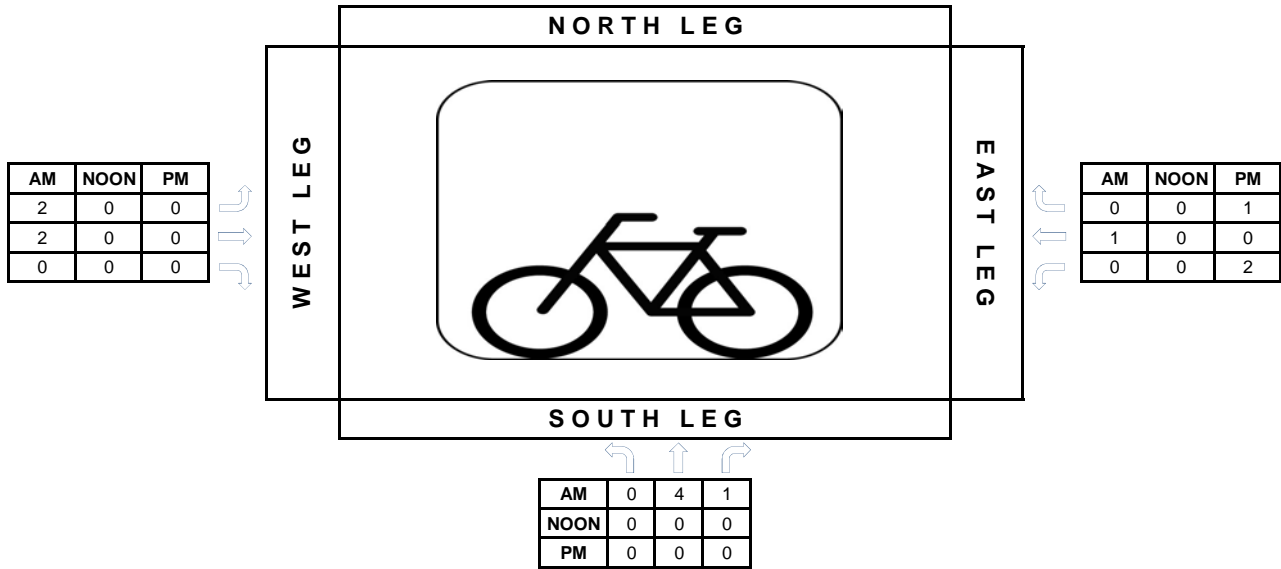
Bicycle Count Peak Hour

PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	2	2	0
NOON	0	0	0
PM	1	7	0



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M
PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	1	0	0	0	0
6:15 AM	0	0	1	2	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	2	2	2	0	0	0
7:00 AM	0	0	0	2	0	3	0	0
7:15 AM	0	0	0	1	0	0	0	0
7:30 AM	0	0	1	3	1	0	0	0
7:45 AM	0	0	1	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	2	0	1	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0
TOTALS	0	0	7	14	3	4	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	1	0	0	0	0	0
6:15 AM	0	0	0	0	0	1	0	0	0	0	1	0
6:30 AM	0	0	0	0	0	0	0	1	0	0	0	0
6:45 AM	0	1	0	0	1	0	0	1	0	0	0	0
7:00 AM	0	3	1	0	1	1	2	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	1	2	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	1	2	0	2	0	0	0	0	0
TOTALS	0	10	1	1	5	4	5	2	0	0	1	1

P M
PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	2	0	0	0	0	0
3:15 PM	0	0	3	0	0	0	0	0
3:30 PM	0	0	0	2	0	0	0	0
3:45 PM	0	0	4	0	0	0	0	0
4:00 PM	0	0	1	0	0	0	0	0
4:15 PM	0	0	1	0	0	2	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	0	0
5:00 PM	0	0	3	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	1	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	16	3	0	2	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
3:15 PM	0	2	1	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0
4:30 PM	0	0	0	0	4	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	2	1	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	2	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0
TOTALS	0	3	1	0	11	1	0	2	0	2	0	1

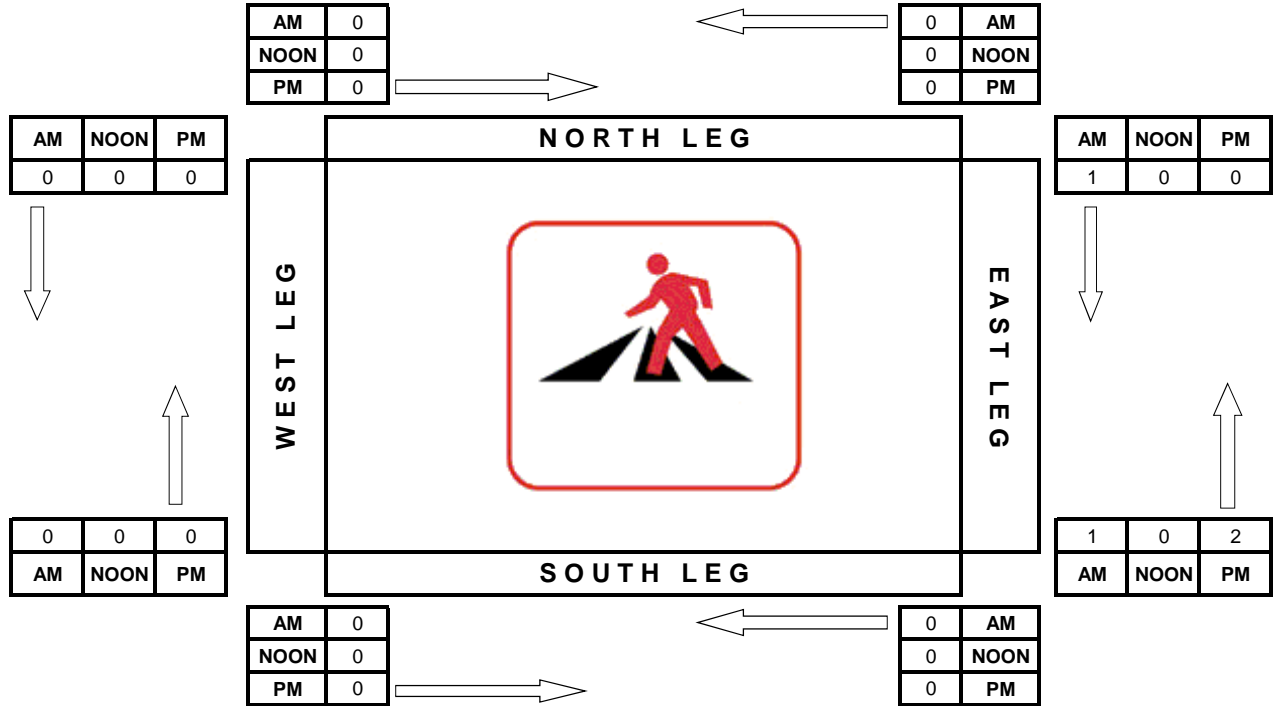
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

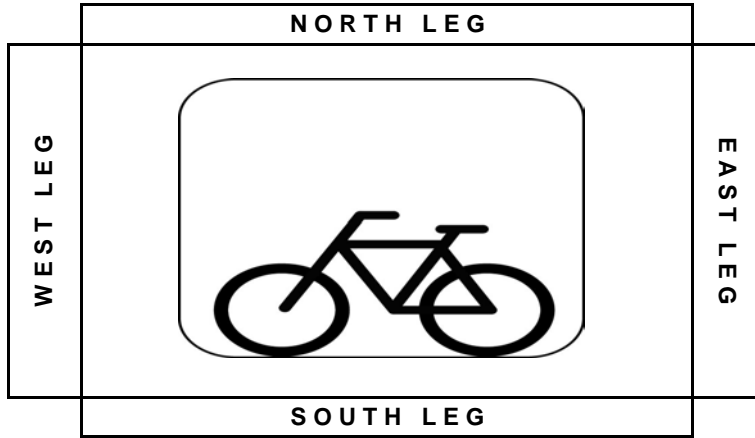
PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

AM	1	2	0
NOON	0	0	0
PM	1	6	0

AM	NOON	PM
0	0	0
1	0	0
0	0	1



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	1	5	0
NOON	0	0	0
PM	0	1	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	1	0	0	0
7:00 AM	0	0	0	0	0	1	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	2	1	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	1	0	0	1	0	0	0
6:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
7:00 AM	1	2	0	0	1	0	0	0	1	0	0	0
7:15 AM	0	1	0	0	0	0	0	1	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	1	0	0	0	0
8:30 AM	0	3	0	0	1	0	0	0	0	0	0	0
8:45 AM	0	2	0	0	1	0	0	0	0	0	0	0
TOTALS	2	9	0	0	3	2	1	2	2	0	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	0
4:45 PM	0	0	0	0	1	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	2	1	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	1	0	0	0	0	0	0	0	0	0	0
3:15 PM	2	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	3	1	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	2	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	2	3	0	0	7	1	0	0	1	0	0	0

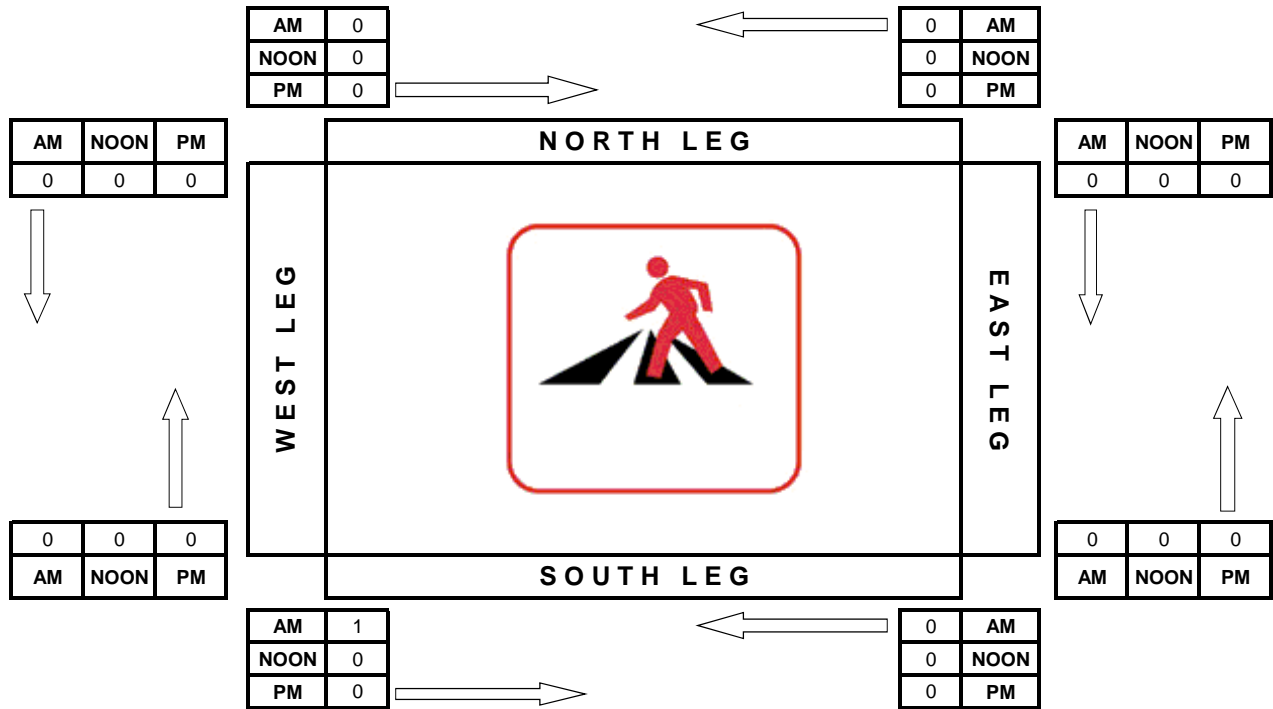
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

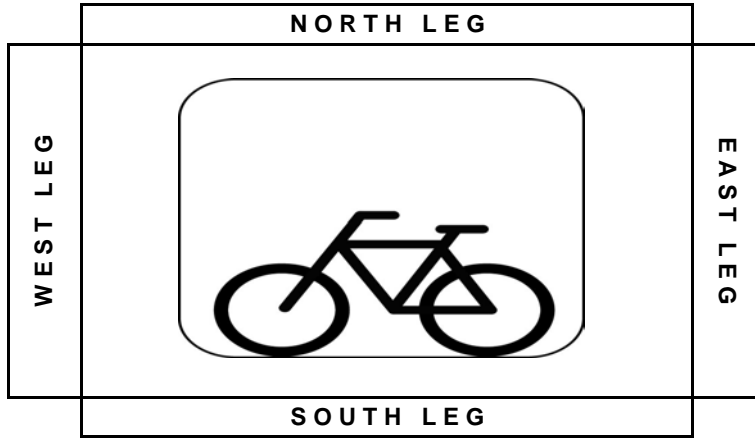
PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	0	0
NOON	0	0	0
PM	0	0	0

AM	NOON	PM
0	0	0
1	0	1
2	0	4



AM	NOON	PM
0	0	0
3	0	3
0	0	0

AM	11	0	1
NOON	0	0	0
PM	2	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	1	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	2	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	2	0	0	0	0	0	0	0	1	0	0	0
8:00 AM	3	0	1	0	0	0	0	1	0	0	1	0
8:15 AM	4	0	0	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0
TOTALS	11	0	2	0	0	0	0	1	3	0	4	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	2	0	0	0	0	0	0	1	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	1	0	0	2	0
3:45 PM	0	0	0	0	0	0	0	0	3	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0
4:15 PM	2	0	0	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	2	0	0	0
TOTALS	4	0	0	0	0	0	0	3	6	0	3	0

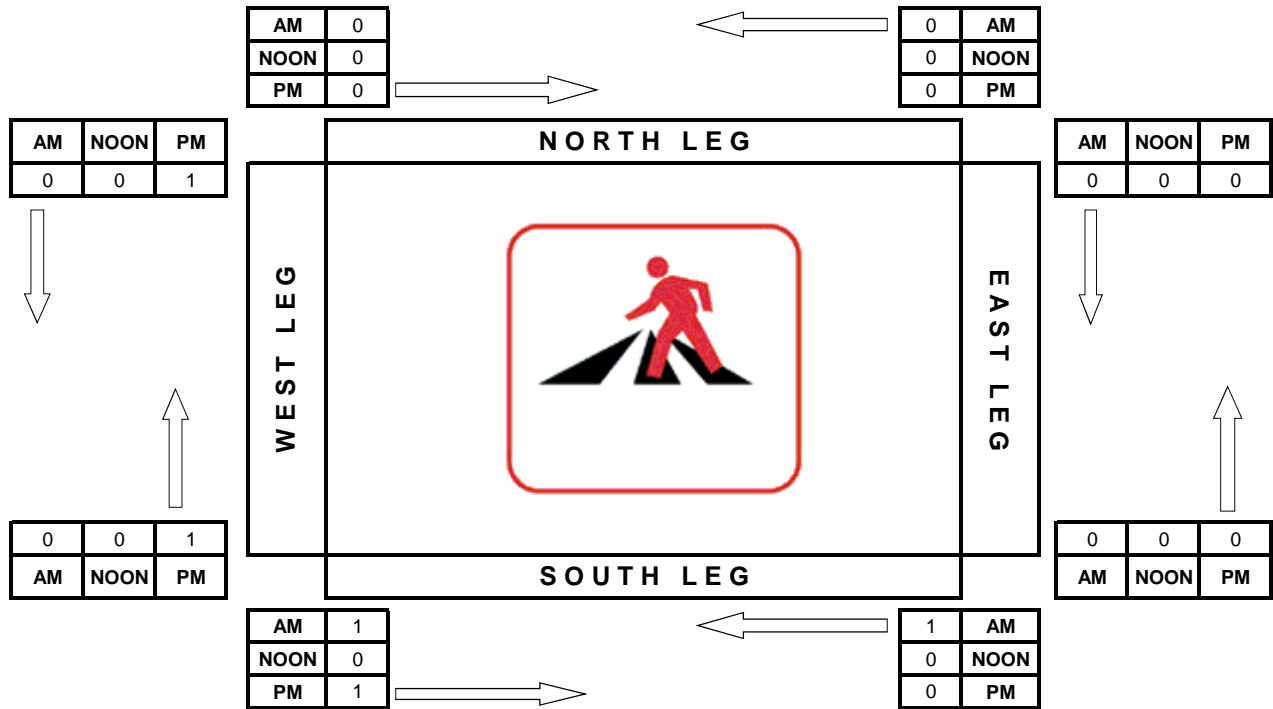
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-005
 N/S Street: Piilani Hwy
 E/W Street: Pikea Ave
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

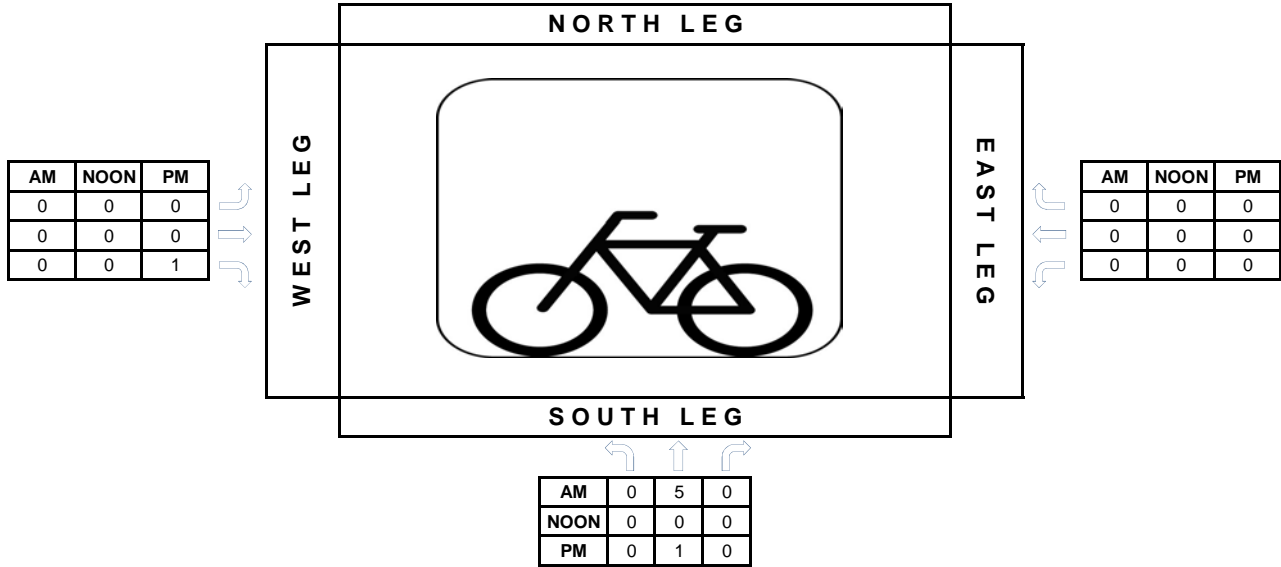
Bicycle Count Peak Hour

PROJECT#: 16-8004-005
 N/S Street: Piilani Hwy
 E/W Street: Pikea Ave
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	1	0
NOON	0	0	0
PM	3	3	0



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-005
 N/S Street: Piilani Hwy
 E/W Street: Pikea Ave
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	1	1	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0
TOTALS	0	0	2	1	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	3	0	0	1	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
TOTALS	0	9	0	0	2	0	0	0	0	0	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	1	0
4:00 PM	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	1	0	0	0	1	1

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
3:15 PM	0	2	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	2	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	2	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0
4:30 PM	0	0	0	0	3	1	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	1	3	0	0	0	0	0	0
5:30 PM	0	0	0	0	2	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	1	0	0	0
TOTALS	0	5	0	0	9	5	0	0	1	0	0	0

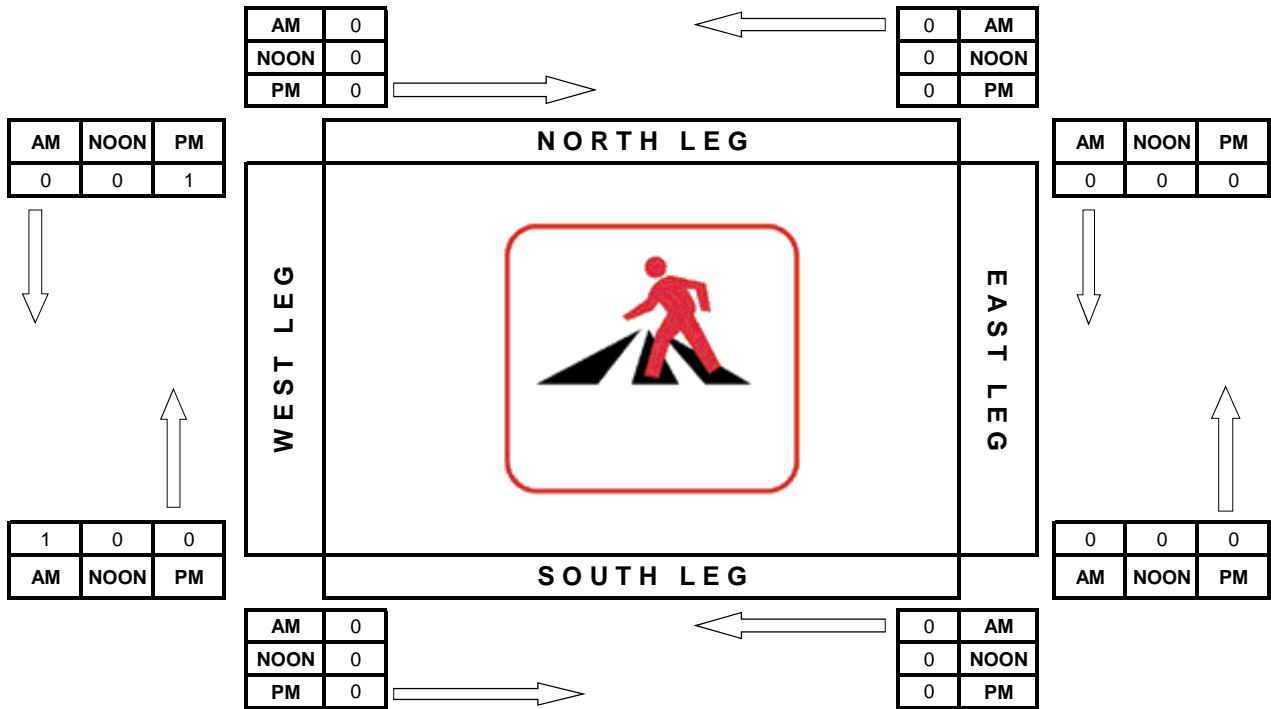
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

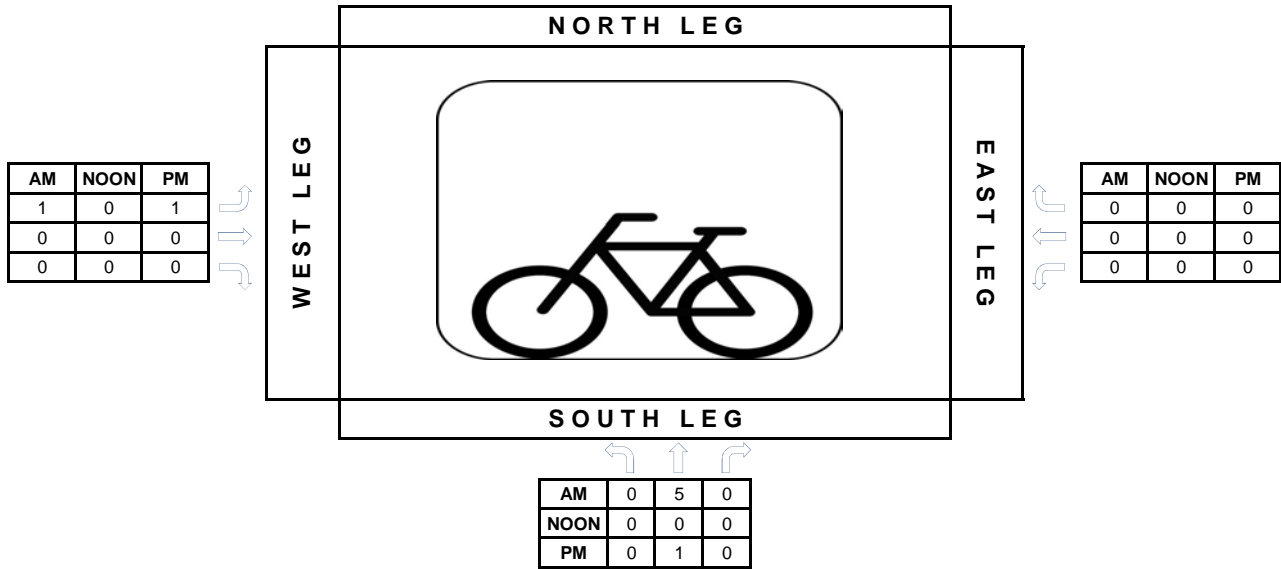
Bicycle Count Peak Hour

PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	3	0
NOON	0	0	0
PM	1	6	0



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	1	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	1	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	3	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0
8:15 AM	0	4	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	2	0	1	0	0	0	0	0
TOTALS	0	9	0	0	4	0	1	0	0	0	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	1

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
3:15 PM	0	2	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	2	0	1	0	0	0	0	0
4:45 PM	0	0	0	0	2	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	2	1	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0
TOTALS	0	5	0	0	9	1	2	0	0	0	0	0

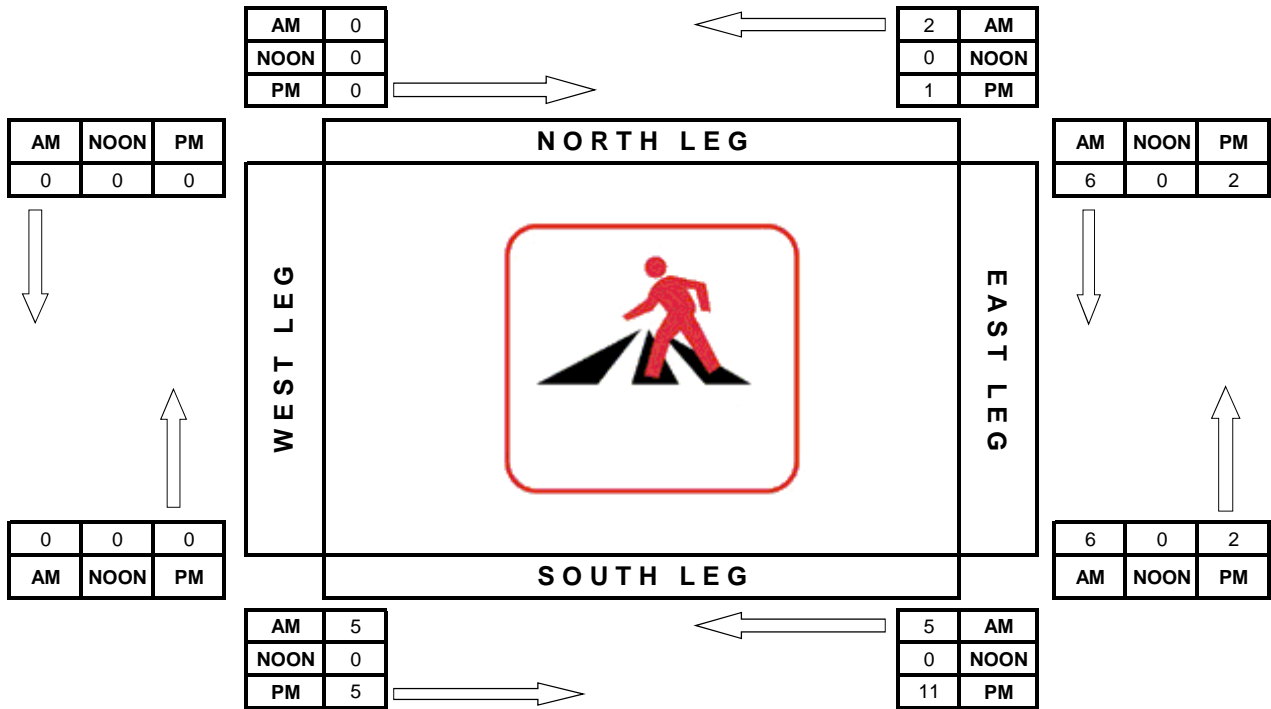
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

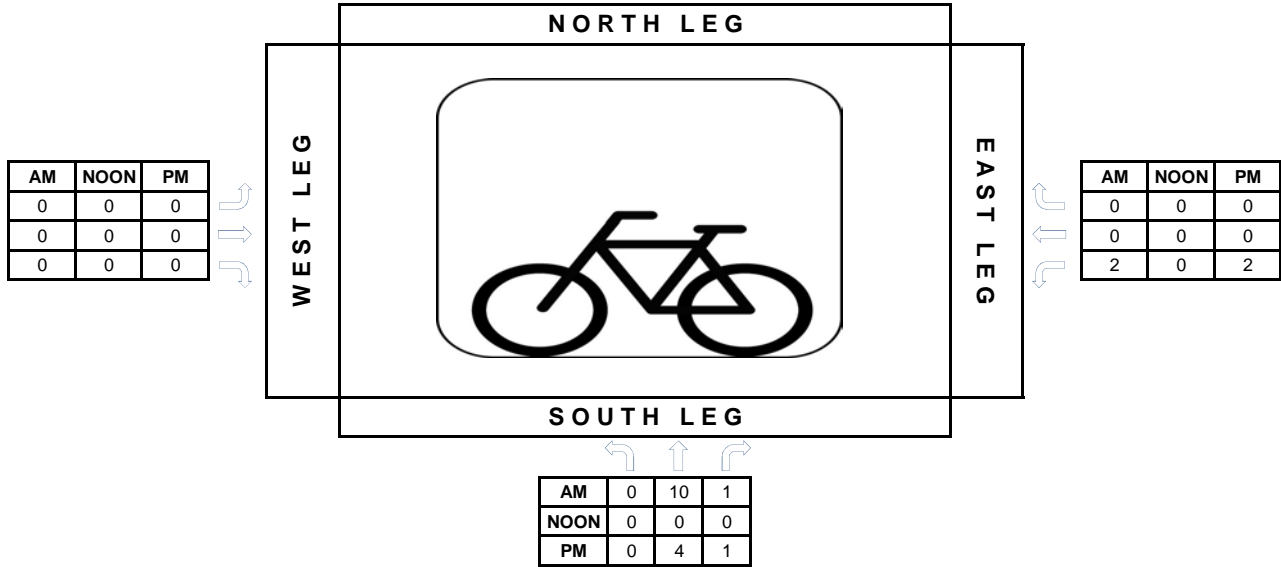
Bicycle Count Peak Hour

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	8	0
NOON	0	0	0
PM	0	6	1



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	1	0	0
6:30 AM	0	2	1	1	4	2	0	0
6:45 AM	0	0	0	1	0	1	0	0
7:00 AM	0	0	1	1	1	1	0	0
7:15 AM	0	0	3	2	1	2	0	0
7:30 AM	0	0	1	3	0	4	0	0
7:45 AM	0	0	1	0	0	1	0	0
8:00 AM	0	0	1	0	1	2	0	0
8:15 AM	0	0	0	0	0	1	0	0
8:30 AM	0	0	0	0	3	2	0	0
8:45 AM	0	1	1	0	1	0	0	0
TOTALS	0	3	9	8	11	17	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	1	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	1	0	0	0	0	0	0	0	0	0
6:30 AM	0	1	0	0	2	0	0	0	0	1	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	3	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	4	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	4	0	0	2	0	0	0	0	0	0	0
7:45 AM	0	1	1	0	2	0	0	0	0	1	0	0
8:00 AM	0	4	0	0	1	0	0	0	0	1	0	0
8:15 AM	0	1	0	0	3	0	0	0	0	0	0	0
8:30 AM	0	4	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	2	0	0	0	0	0	0	0
TOTALS	0	23	2	0	12	0	0	0	0	3	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	2	0	0	0	0	0
3:15 PM	0	0	1	0	1	1	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	1	0	0	0	0
4:00 PM	0	0	2	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	5	0	2	0	0
5:30 PM	0	1	1	6	0	0	0	0
5:45 PM	0	0	4	0	2	0	0	0
TOTALS	0	1	10	13	3	3	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	2	0	0	1	0	0	0	0	1	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	2	0	0
3:30 PM	0	0	2	0	1	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	3	0	0	0	0	0	0	0
4:00 PM	0	2	0	0	1	0	0	0	0	1	0	0
4:15 PM	0	2	1	1	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	2	0	0	0	0	1	0	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	1	0	0	0	0	1	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	3	0	0	0	0	0	0	0
TOTALS	0	8	5	1	13	0	0	0	0	6	0	1

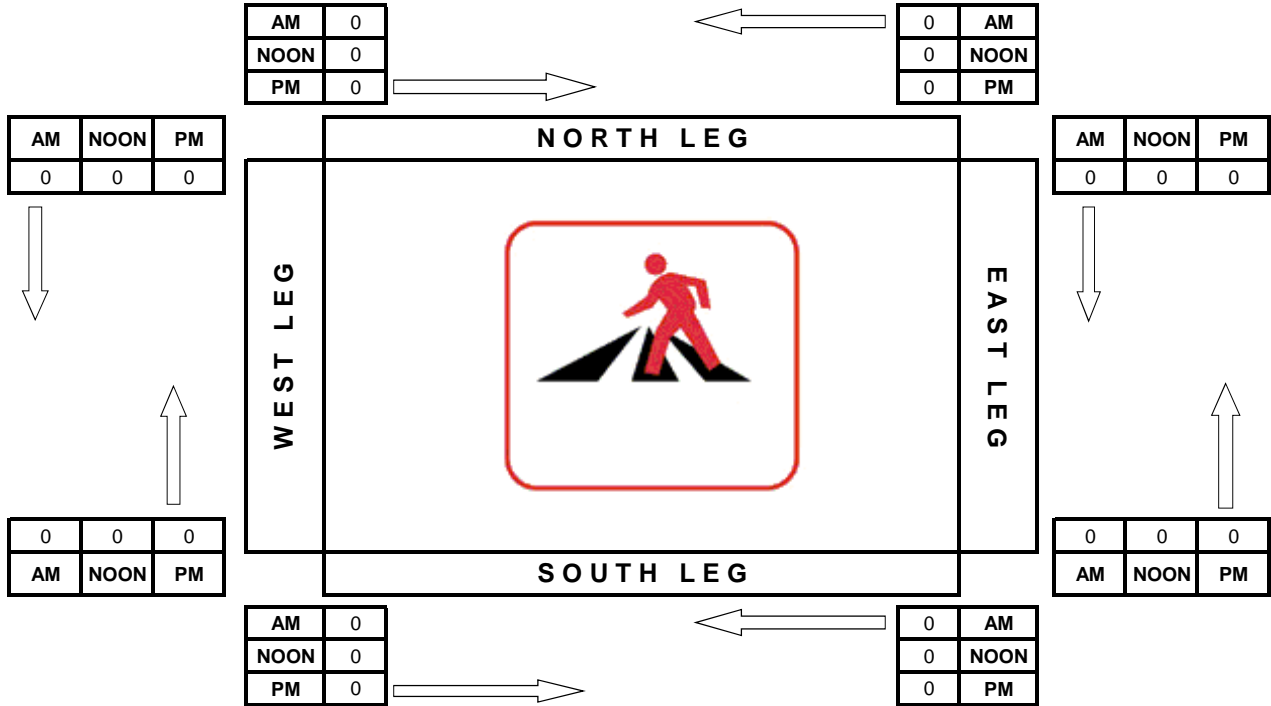
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-008
 N/S Street: Piilani Hwy
 E/W Street: Kulanihakoai St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

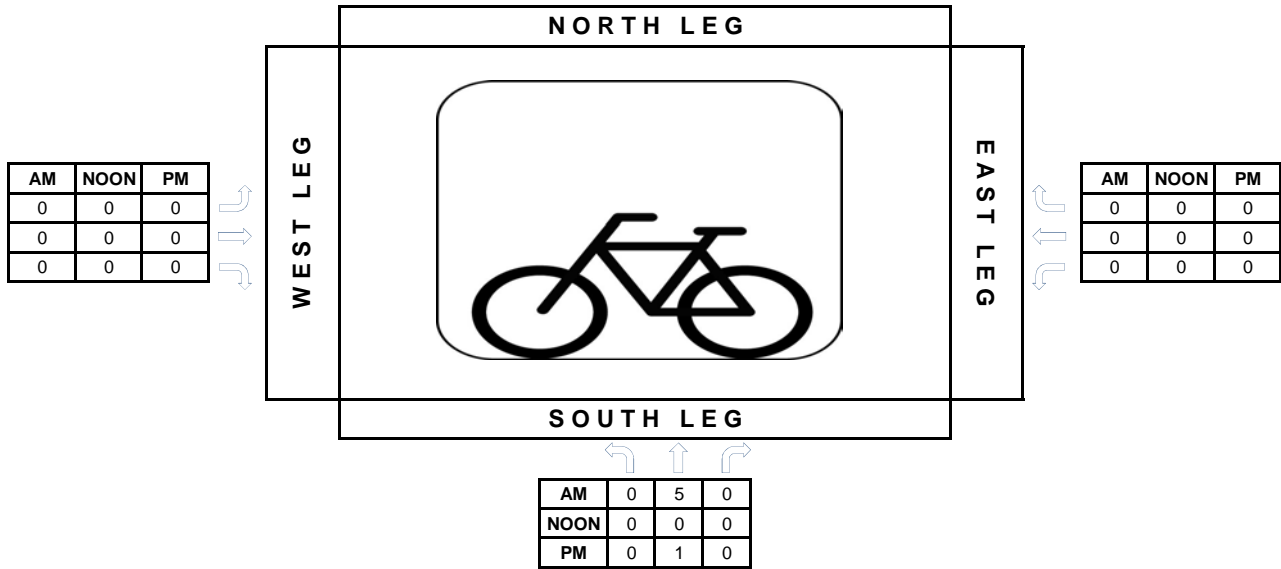
Bicycle Count Peak Hour

PROJECT#: 16-8004-008
 N/S Street: Piilani Hwy
 E/W Street: Kulanihakai St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	4	0
NOON	0	0	0
PM	2	6	0



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-008
 N/S Street: Piilani Hwy
 E/W Street: Kulanihako St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0
8:15 AM	0	4	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	3	0	0	0	0	0	0	0
TOTALS	0	10	0	0	5	0	0	0	0	0	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
3:15 PM	0	2	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	0	0	0	0	0	1	0	0	0
3:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	3	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	1	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	1	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0
TOTALS	0	5	0	0	10	2	0	0	1	0	0	0

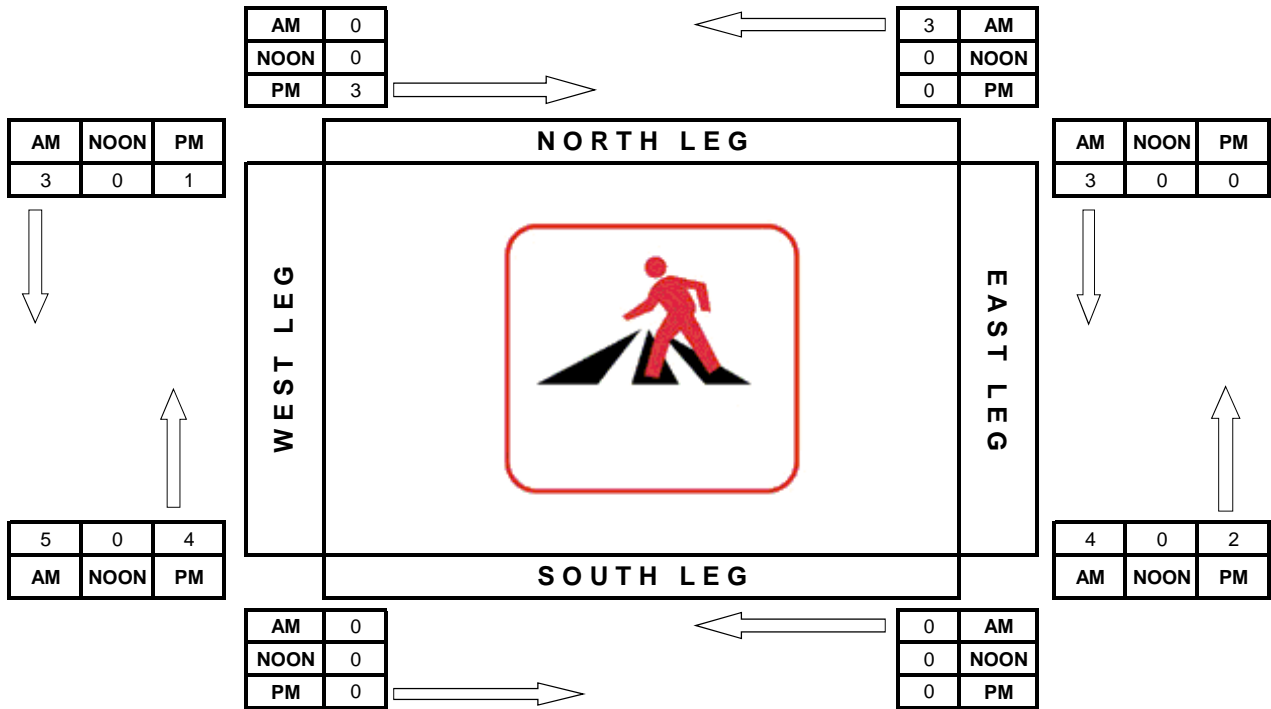
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

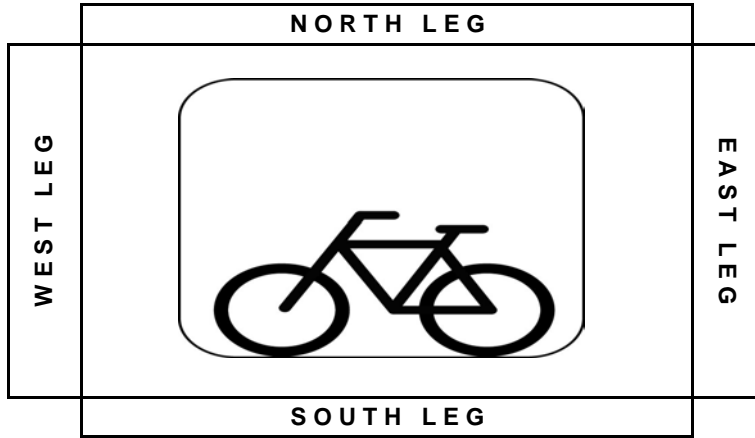
PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	0	0	0
NOON	0	0	0
PM	0	0	0

AM	NOON	PM
0	0	1
0	0	1
1	0	0



AM	NOON	PM
0	0	1
0	0	0
0	0	1

AM	0	2	1
NOON	0	0	0
PM	0	0	1

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	1	0
6:15 AM	0	0	0	0	0	0	1	0
6:30 AM	1	0	0	0	0	0	2	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	1	0	0	1
7:15 AM	0	2	0	0	1	1	0	1
7:30 AM	0	1	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	2	4	1
8:00 AM	0	1	0	0	0	1	0	0
8:15 AM	0	1	0	0	4	0	0	1
8:30 AM	0	1	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	1	0	0
TOTALS	1	7	0	0	6	5	9	5

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	2	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	1	0	0	0	0	0	1	0	0	0
TOTALS	0	3	1	0	3	0	0	0	0	1	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	0	0	0	0	0	1	0	0
3:15 PM	0	0	0	0	0	3	0	0
3:30 PM	0	0	0	0	1	0	2	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	1	1	0	0
4:15 PM	0	0	0	0	0	0	2	1
4:30 PM	1	0	0	0	1	0	1	0
4:45 PM	1	0	0	0	0	0	0	0
5:00 PM	1	0	0	0	1	0	1	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	2	0
TOTALS	3	0	0	0	4	5	10	1

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	1	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	1	0	0
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0
TOTALS	0	1	1	1	0	0	1	1	1	1	0	1

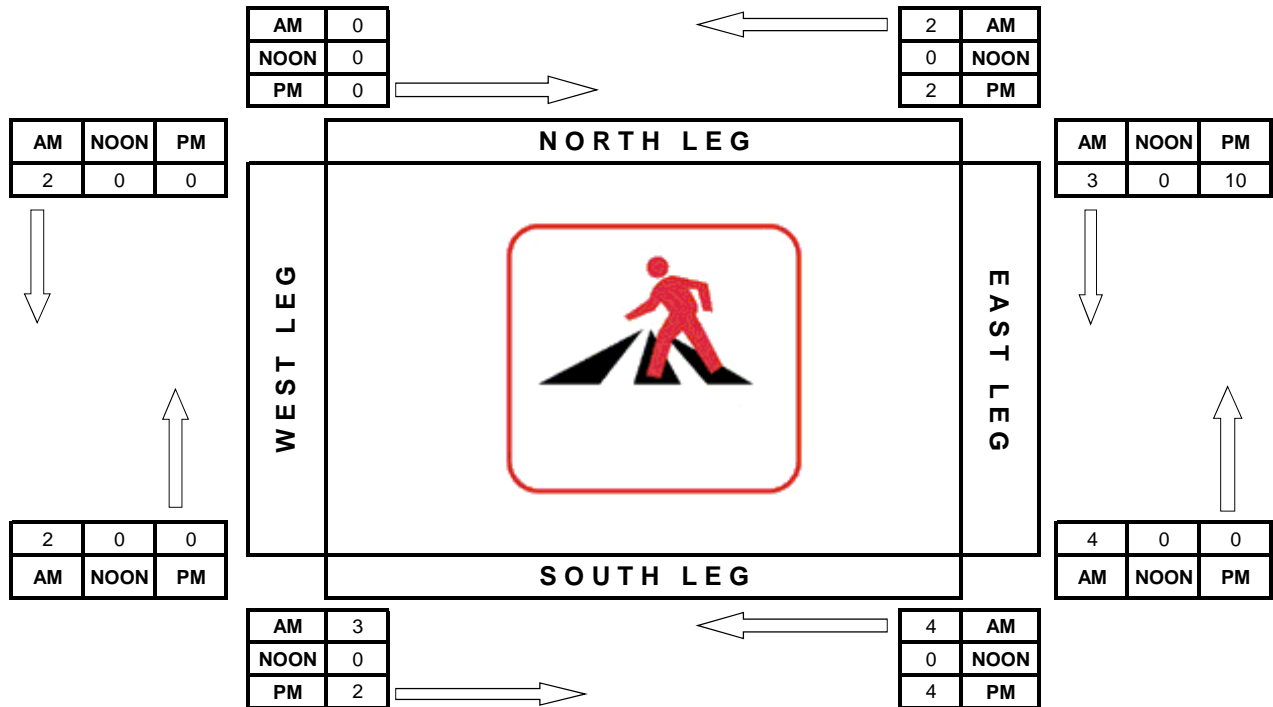
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

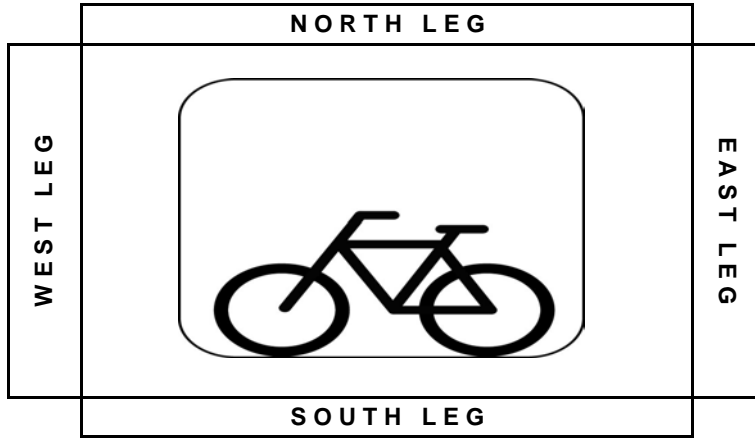
PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

	Start:	End:
AM	6:00	9:00
NOON		
PM	15:00	18:00

DAY: Tuesday

AM	1	0	0
NOON	0	0	0
PM	1	0	0

AM	NOON	PM
2	0	3
0	0	2
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	0	0	1
NOON	0	0	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/12/2016
 CITY: Kihei

DAY: Tuesday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:00 AM	0	0	0	0	0	0	2	0
6:15 AM	0	0	0	0	0	0	0	1
6:30 AM	0	1	0	0	0	0	0	0
6:45 AM	1	0	0	0	0	0	0	0
7:00 AM	0	1	0	0	1	1	0	1
7:15 AM	0	0	1	2	3	1	1	0
7:30 AM	0	0	1	0	0	0	0	1
7:45 AM	0	2	0	1	1	1	0	0
8:00 AM	0	0	1	1	0	1	1	1
8:15 AM	0	0	1	0	1	0	0	0
8:30 AM	0	0	1	0	1	2	0	0
8:45 AM	1	0	0	0	0	1	0	0
TOTALS	2	4	5	4	7	7	4	4

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	1	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	0	1	0	0	1	3	0	0	0	0	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
3:00 PM	1	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	1	0
3:30 PM	1	1	0	0	0	0	0	0
3:45 PM	0	1	0	0	0	0	0	0
4:00 PM	0	0	2	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	3	0	0
5:15 PM	0	1	1	4	0	2	0	0
5:30 PM	0	1	0	0	0	2	0	0
5:45 PM	0	0	1	0	0	3	0	0
TOTALS	2	4	4	4	0	10	1	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	1	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	2	1	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	4	3	3	0	0	0	0

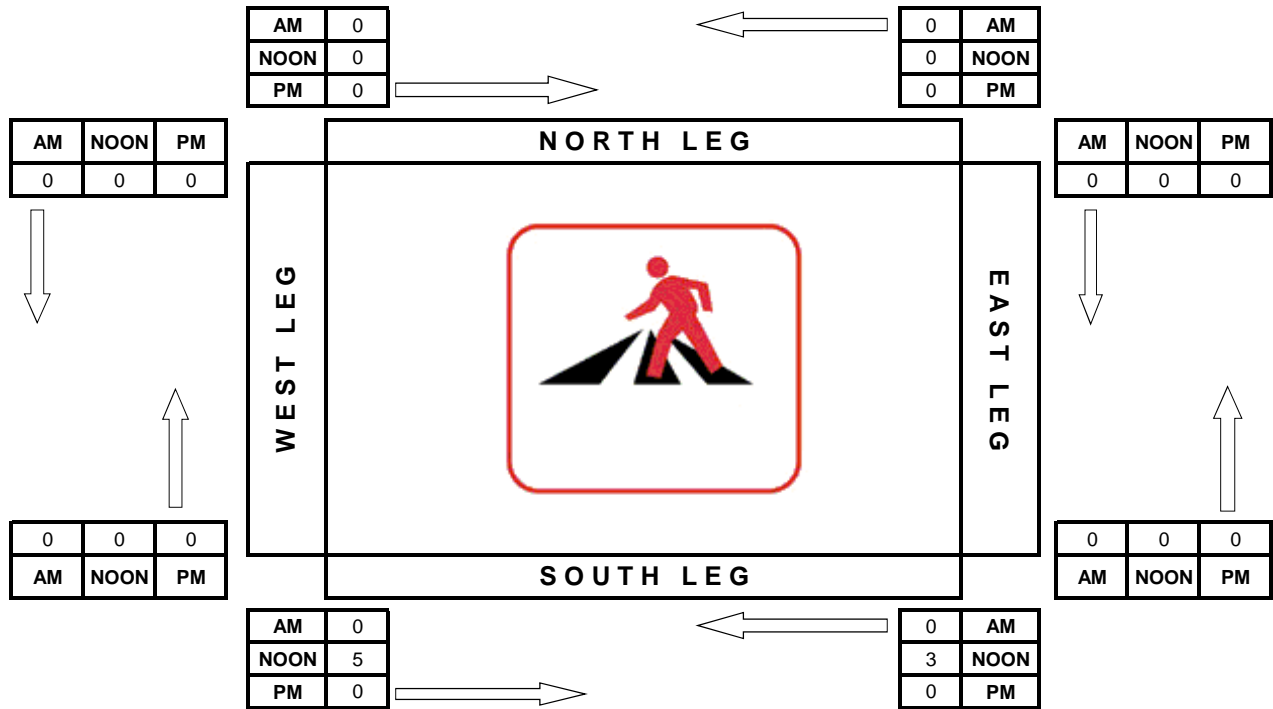
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

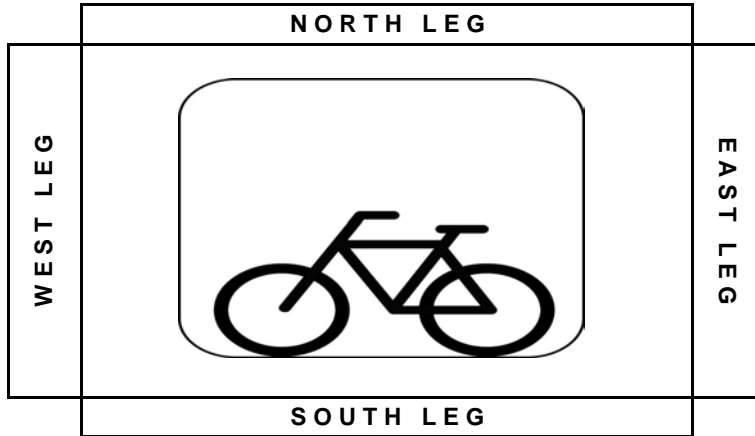
PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	5	1
PM	0	0	0

AM	NOON	PM
0	0	0
0	1	0
0	0	0



AM	NOON	PM
0	0	0
0	1	0
0	0	0

AM	0	0	0
NOON	0	4	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-001
 N/S Street: Piilani Hwy
 E/W Street: Ohukai Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	1	1	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	1	0	0	0	0
10:45 AM	0	0	1	0	0	0	0	0
11:00 AM	0	0	1	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	2	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	3	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0
12:45 PM	0	0	0	3	0	0	0	0
1:00 PM	0	0	2	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	11	7	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	0	2	0	0	1	0	0	1	0	0	1	0
10:15 AM	0	2	0	0	0	0	0	1	0	0	0	0
10:30 AM	0	2	0	0	1	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	1	4	0	0	0	0	0	1	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	2	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:15 PM	0	0	0	0	1	0	0	1	1	0	1	0
12:30 PM	0	0	0	0	1	0	0	0	0	0	1	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	8	0	1	11	0	0	3	1	0	5	1

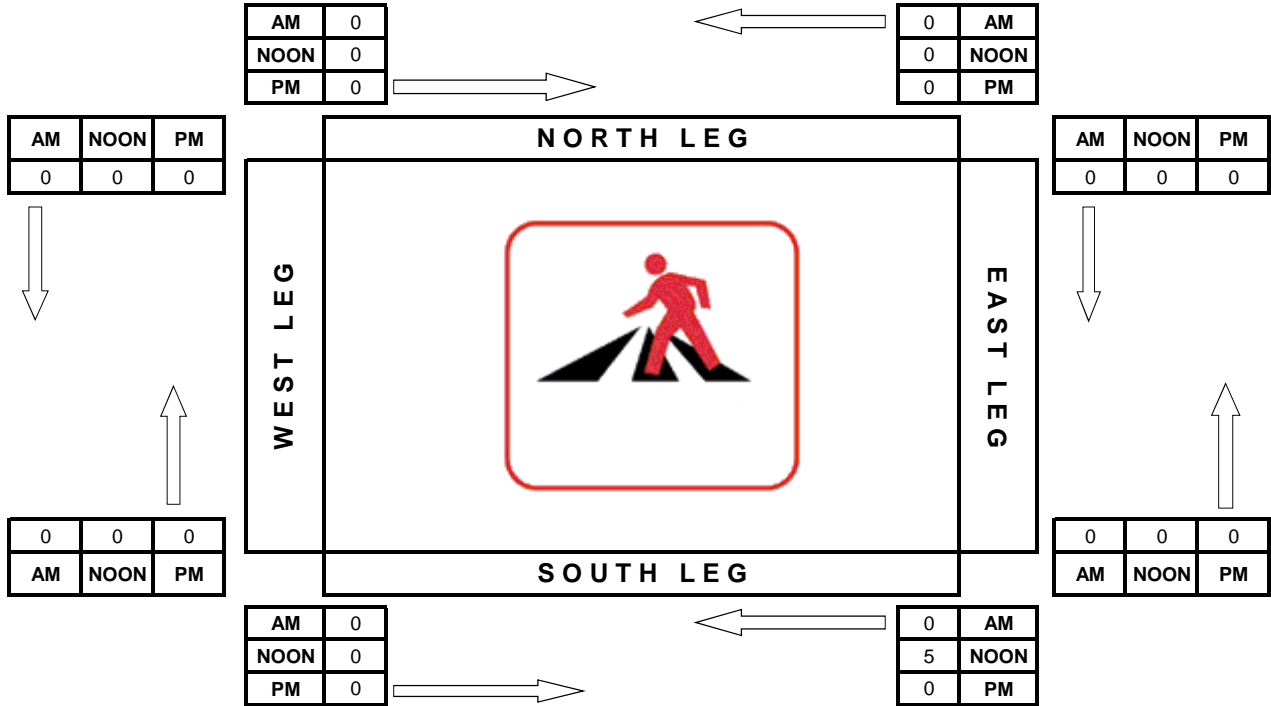
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

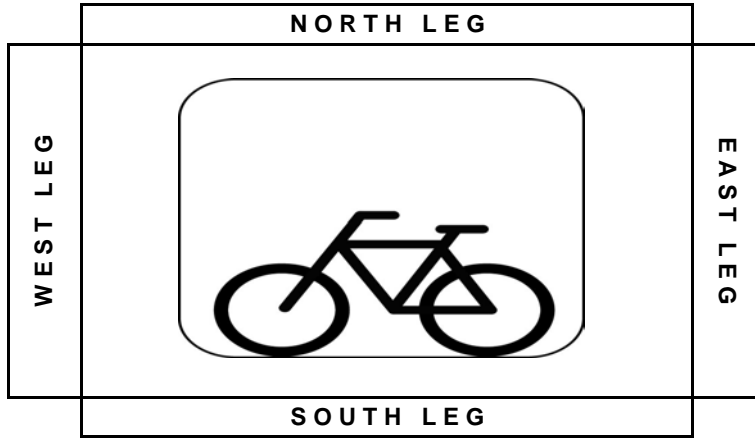
PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	2	2	2
PM	0	0	0

AM	NOON	PM
0	1	0
0	2	0
0	0	0



AM	NOON	PM
0	0	0
0	1	0
0	0	0

AM	0	0	0
NOON	0	8	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-002
 N/S Street: Piilani Hwy
 E/W Street: Kaiwahine St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	1	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	3	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	2	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	1	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0
1:00 PM	0	0	1	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	1	0	0	1	0
TOTALS	0	0	2	8	0	0	1	0

BIKES

T I M E	NB			SB			EB			WB			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
10:00 AM	0	4	0	2	0	0	0	1	0	0	0	1	0
10:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0
10:30 AM	0	2	0	0	1	0	1	1	0	0	0	0	0
10:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	4	1	0	0	0	0	0	1	0
11:15 AM	0	0	0	0	2	0	0	1	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	1	0	0	1	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	1	0	0	0	0	0	0	0	1	0
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	2	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	10	0	3	11	4	1	4	0	0	0	5	0

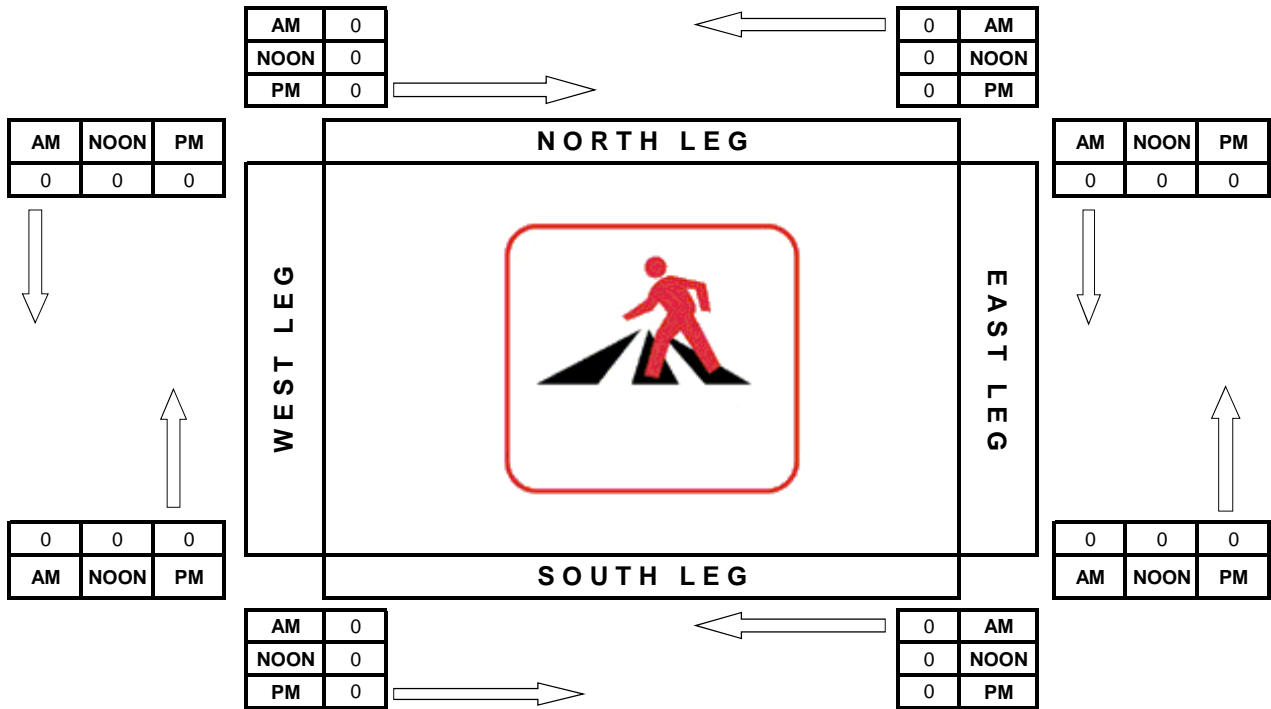
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

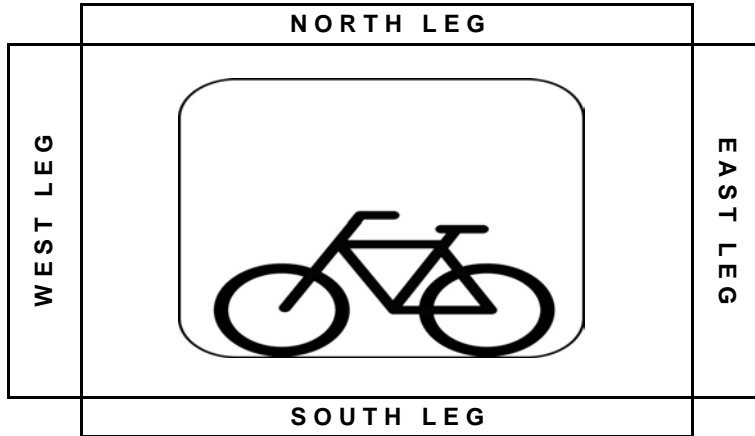
PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		

AM	0	0	0
NOON	9	6	1
PM	0	0	0

AM	NOON	PM
0	9	0
0	0	0
0	1	0



AM	NOON	PM
0	0	0
0	2	0
0	0	0

AM	0	0	0
NOON	5	3	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-003
 N/S Street: Piilani Hwy/Mokulele Hwy
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	5	0	0	1	0	3	6	0	0	0	0	0
10:15 AM	0	0	0	0	2	6	3	0	0	0	2	0
10:30 AM	0	3	0	0	0	0	0	0	1	0	0	0
10:45 AM	0	0	0	0	4	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	2	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	2	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	1	0	0	0
12:00 PM	0	0	1	0	2	0	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	0	0	1	0	0	0
12:30 PM	0	0	0	0	2	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	0	2	0	0
1:00 PM	0	0	0	0	2	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	1	0	1	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	2	1	1	0	0	0	0	0
TOTALS	5	5	2	1	18	12	11	0	3	2	2	0

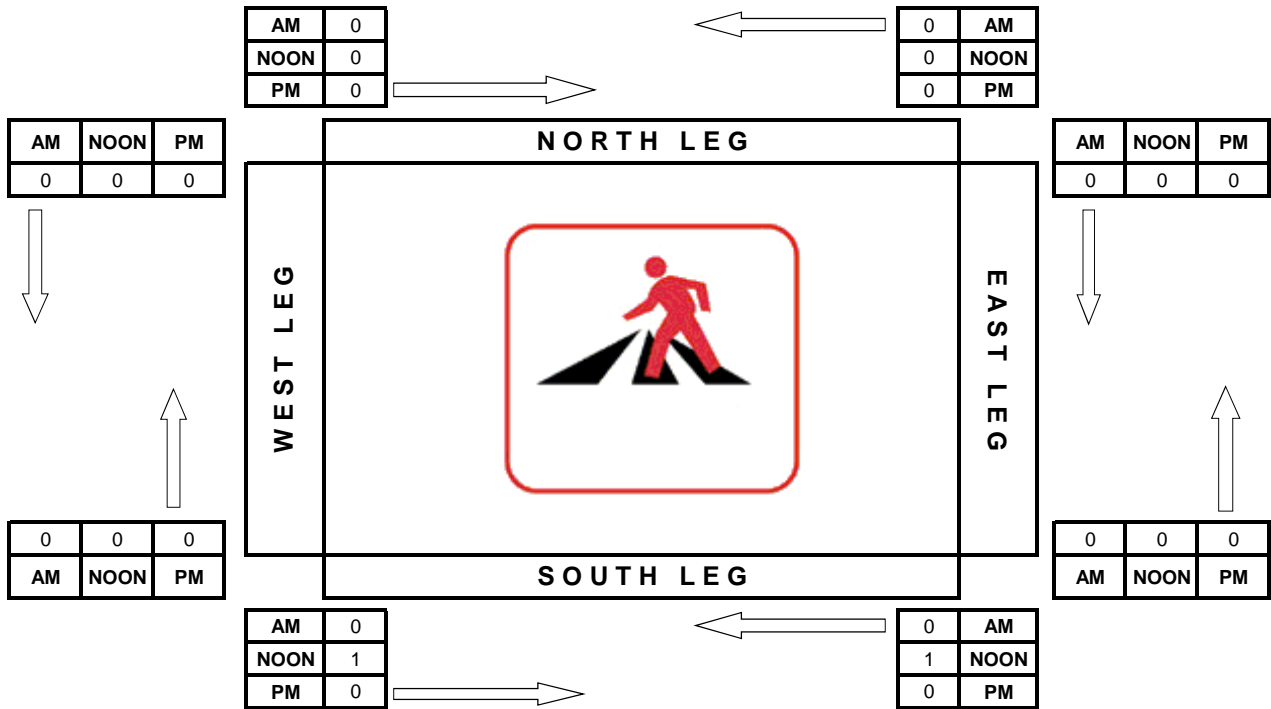
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

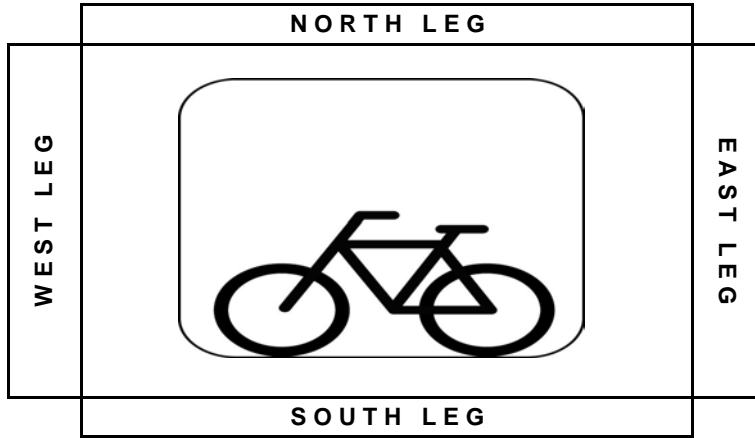
PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	0	0
PM	0	0	0

AM	NOON	PM
0	0	0
0	1	0
0	4	0



AM	NOON	PM
0	0	0
0	3	0
0	0	0

AM	0	0	0
NOON	3	0	6
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-004
 N/S Street: S Kihei Rd
 E/W Street: N Kihei Rd
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	1	1	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	1	1	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	2	0	5	0	0	0	0	1	0	0	3	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	1	0	0	0	0	0	1	0	0	0
10:45 AM	1	0	0	0	0	0	0	0	3	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	1	1	0
11:45 AM	0	0	0	0	0	0	0	1	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	3	0	0	0
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	1	0	0	0
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	1	0	1	0	0
TOTALS	3	0	7	0	0	0	0	4	8	2	4	0

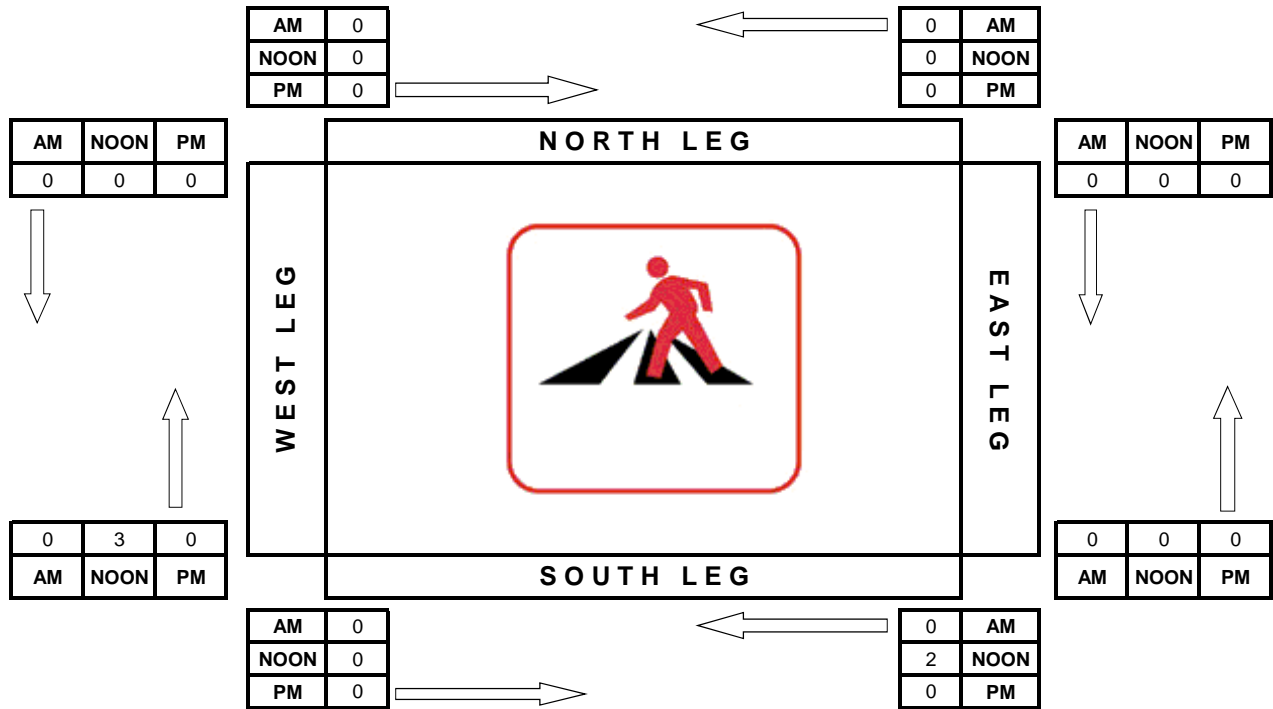
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-005
 N/S Street: Piilani Hwy
 E/W Street: Pikea Ave
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

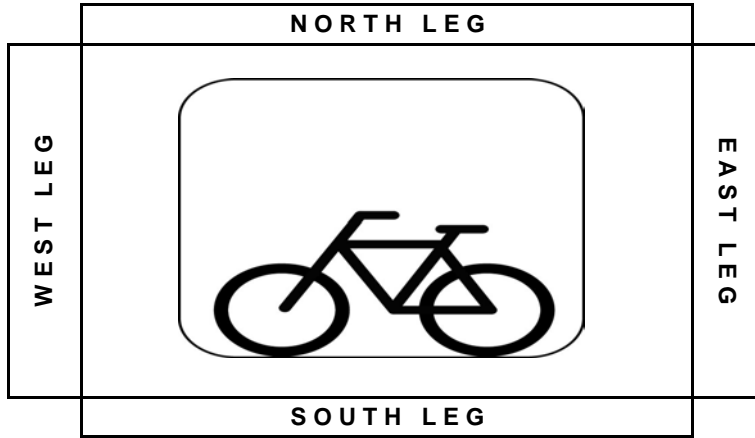
PROJECT#: 16-8004-005
 N/S Street: Piilani Hwy
 E/W Street: Pikea Ave
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	8	0
PM	0	0	0

AM	NOON	PM
0	0	0
0	0	0
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	0	0	0
NOON	0	1	0
PM	0	0	0

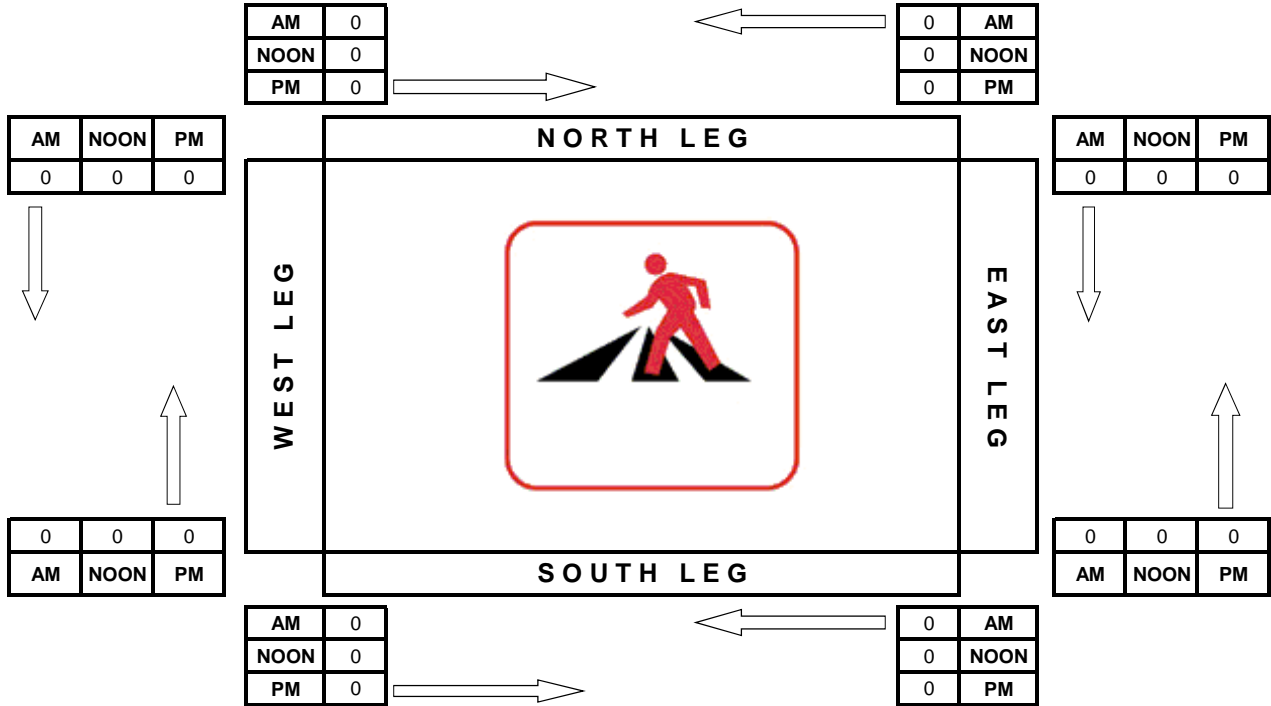
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

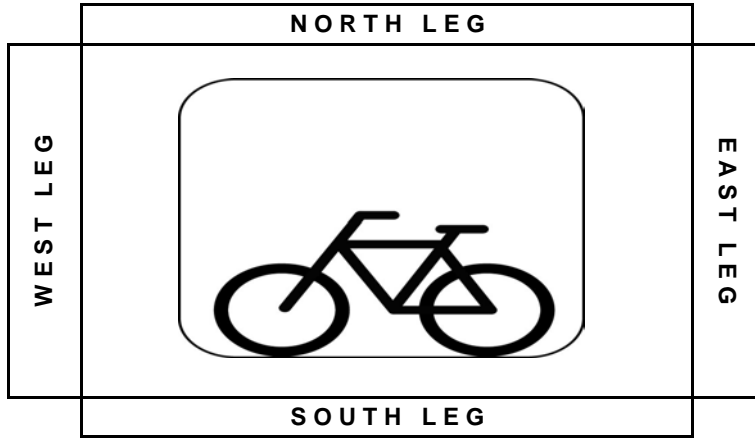
PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	8	0
PM	0	0	0

AM	NOON	PM
0	1	0
0	0	0
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	0	0	0
NOON	1	1	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-006
 N/S Street: Piilani Hwy
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	0	0	0	0	1	0	0	0	0	0	0	0
10:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	1	0	0	1	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	4	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	1	0	0	0	0	0
11:30 AM	1	0	0	0	2	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	2	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	2	0	0	3	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	1	6	0	0	13	0	1	0	0	0	0	0

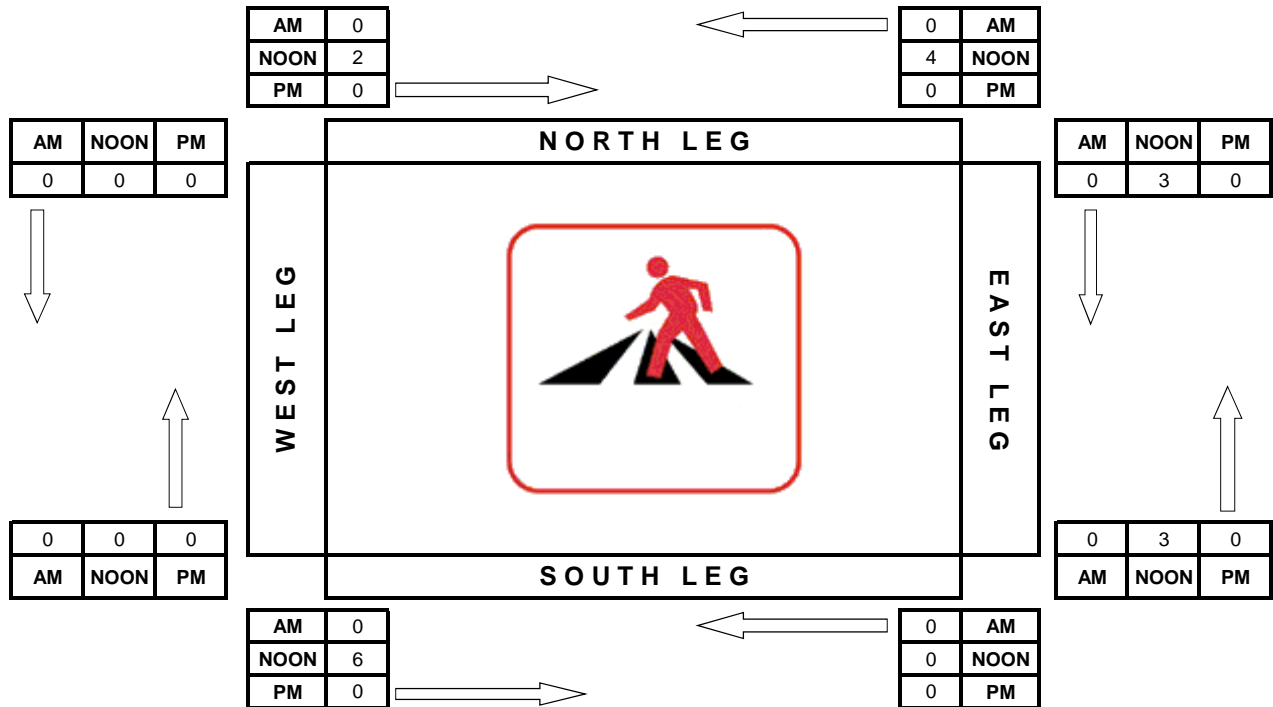
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

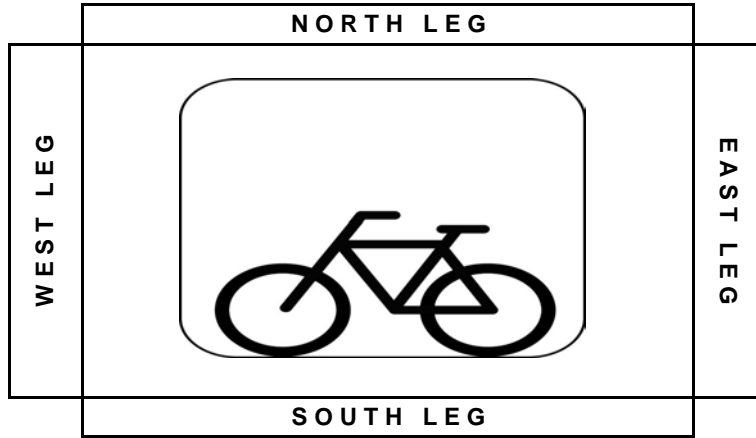
Bicycle Count Peak Hour

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	12	0
PM	0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	NOON	PM
0	0	0
0	0	0
0	3	0

AM	0	0	0
NOON	0	11	3
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-007
 N/S Street: S Kihei Rd
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	4	0	0
10:15 AM	0	0	0	1	2	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	2	2	2	0	2	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	1	2	0	0	0	0	0
11:45 AM	0	1	2	0	1	3	0	0
12:00 PM	0	0	1	0	0	0	0	0
12:15 PM	0	0	0	2	0	2	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	1	2	1	0	0
1:00 PM	0	0	1	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	2	0	0	0	0	0
TOTALS	2	4	10	4	7	10	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	0	5	2	0	3	0	0	0	0	1	0	0
10:15 AM	0	1	0	0	2	0	0	0	0	1	0	0
10:30 AM	0	4	0	0	5	0	0	0	0	1	0	0
10:45 AM	0	1	1	0	2	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	6	0	0	0	0	2	0	0
11:15 AM	0	2	1	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	2	0	3	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	0	2	0	0
12:15 PM	0	2	0	0	1	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	0
12:45 PM	0	2	0	0	0	0	0	0	0	2	0	0
1:00 PM	0	0	1	0	2	0	0	0	0	2	0	0
1:15 PM	0	0	1	0	2	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
TOTALS	0	17	9	0	28	0	0	0	0	12	0	0

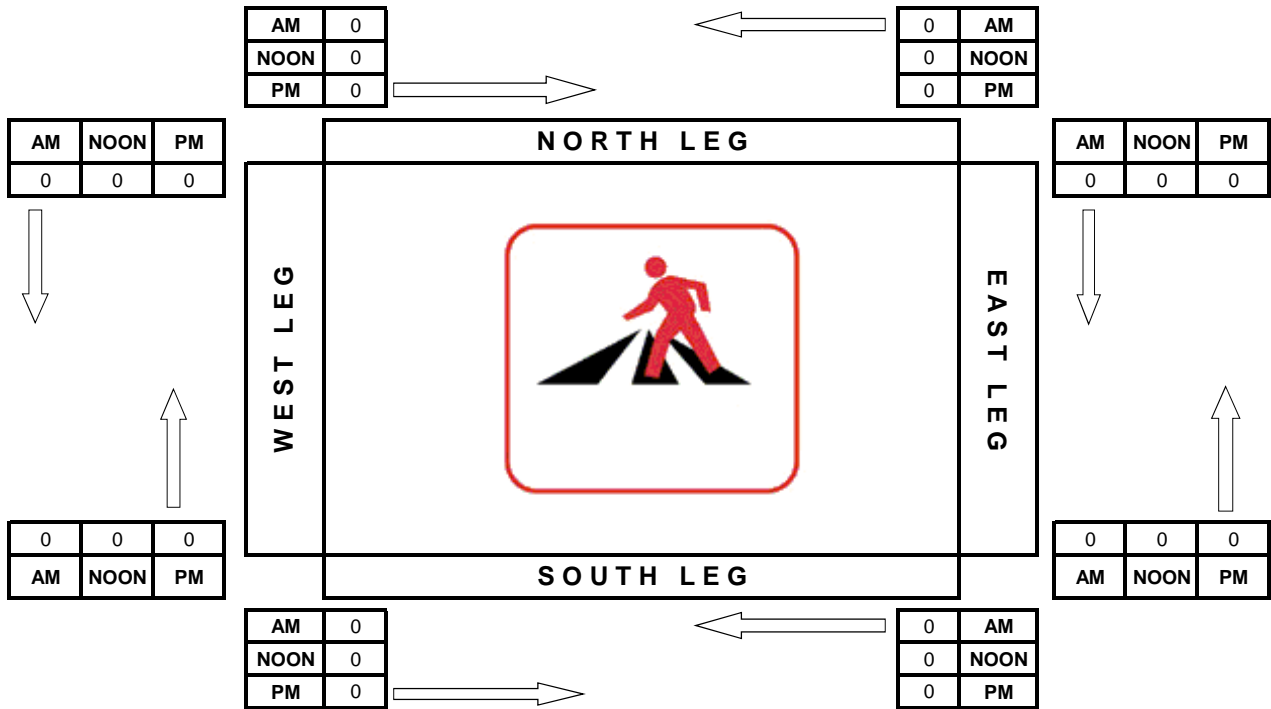
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-008
 N/S Street: Piilani Hwy
 E/W Street: Kulanihakoai St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

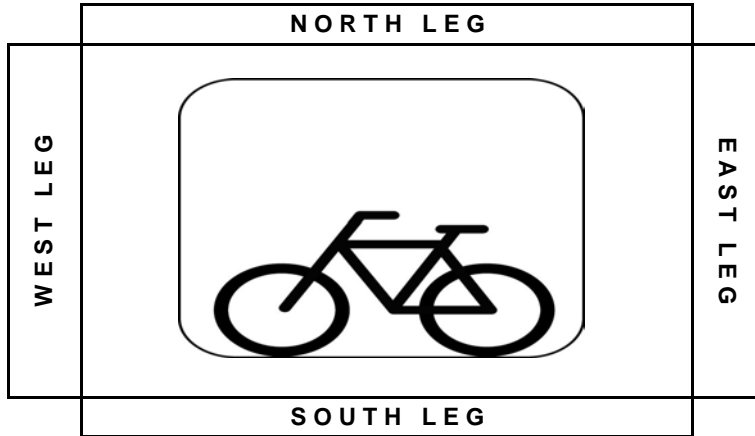
PROJECT#: 16-8004-008
 N/S Street: Piilani Hwy
 E/W Street: Kulanihakai St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	8	0
PM	0	0	0

AM	NOON	PM
0	0	0
0	0	0
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	0	0	0
NOON	0	1	0
PM	0	0	0

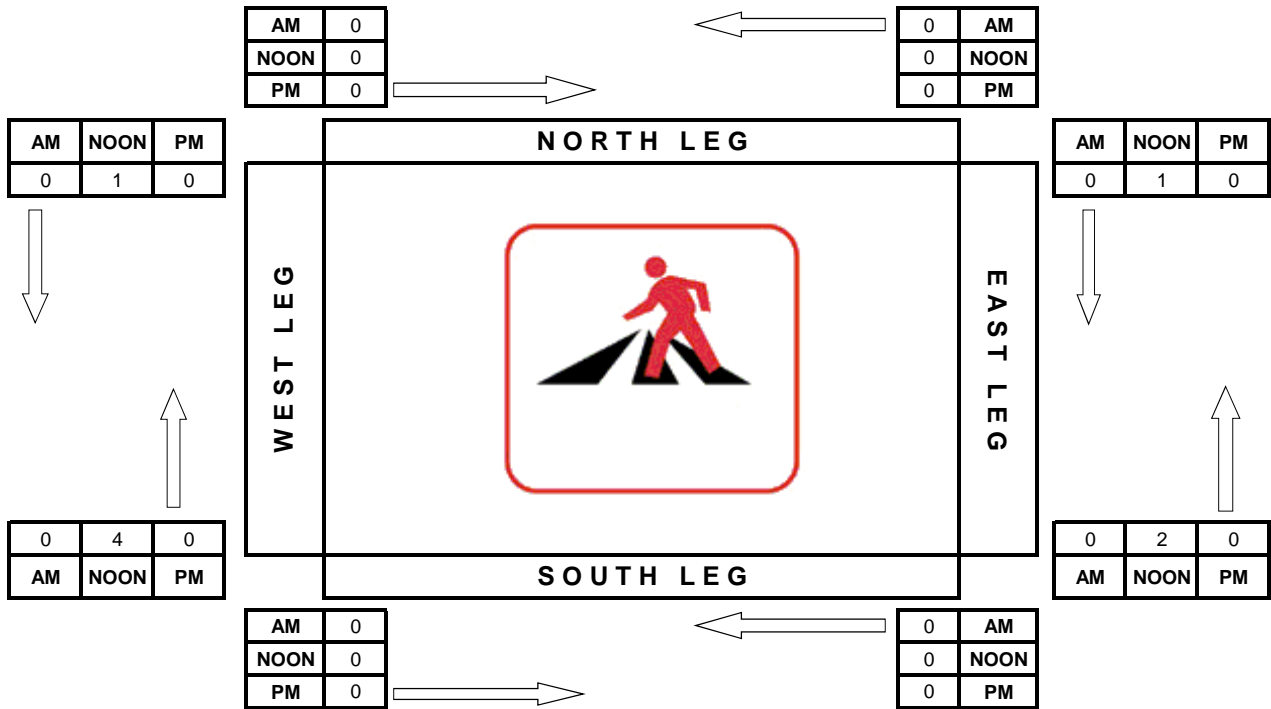
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

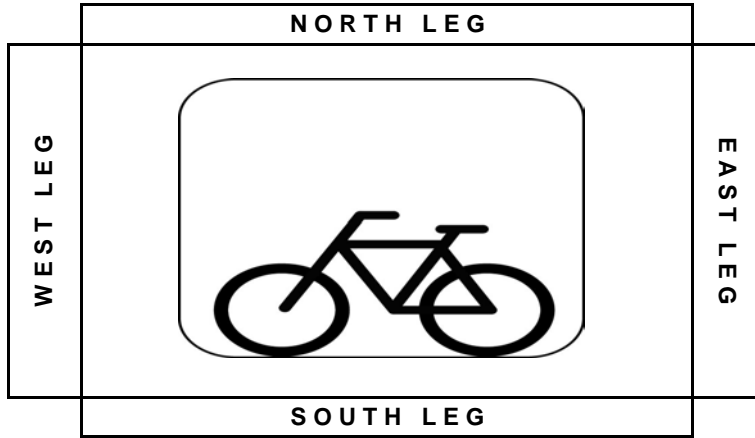
PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	0	0
PM	0	0	0

AM	NOON	PM
0	0	0
0	0	0
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	1	0

AM	0	0	0
NOON	0	0	1
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-009
 N/S Street: Kenolio St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	1	0	0
10:15 AM	0	0	0	0	1	0	0	1
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	2	0	1	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	1	1
11:45 AM	0	0	0	0	0	1	2	0
12:00 PM	0	1	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	1	0	0	3	2	4	2

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	2	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	1	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	0	1	0	0	0	0	0	2	1	0	0

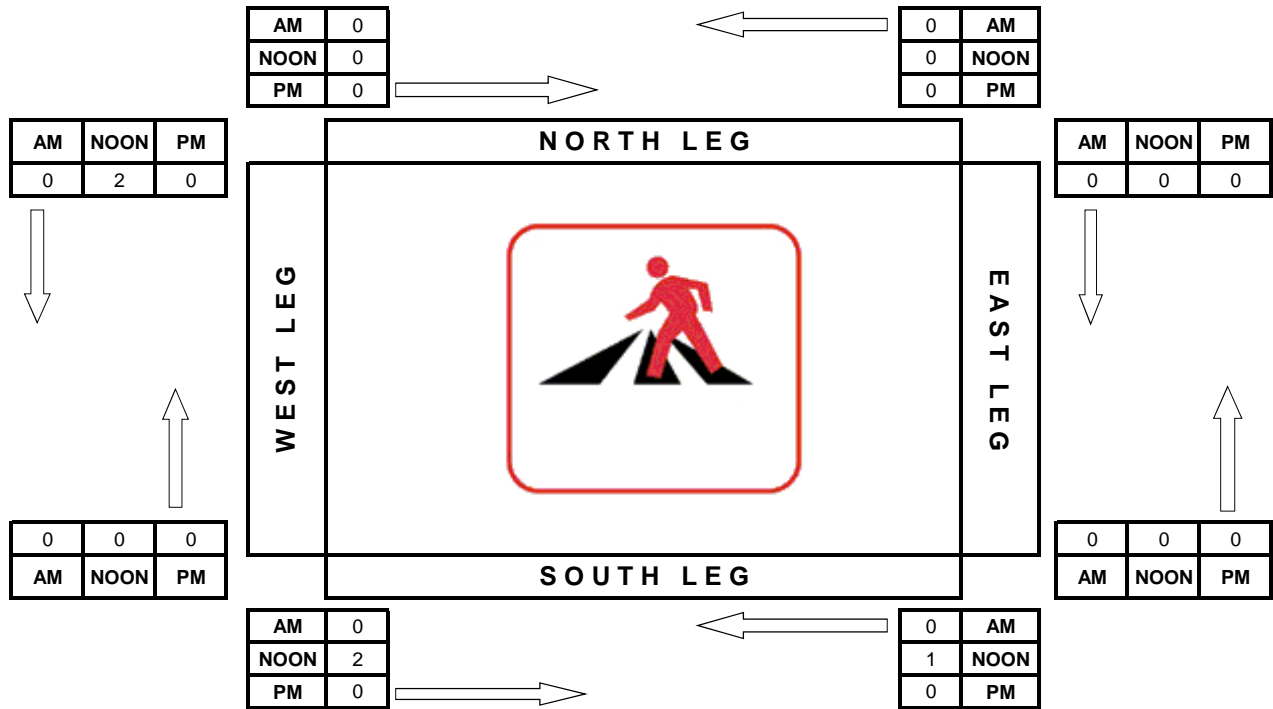
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

	Start:	End:
AM		
NOON	10:00	14:00
PM		



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

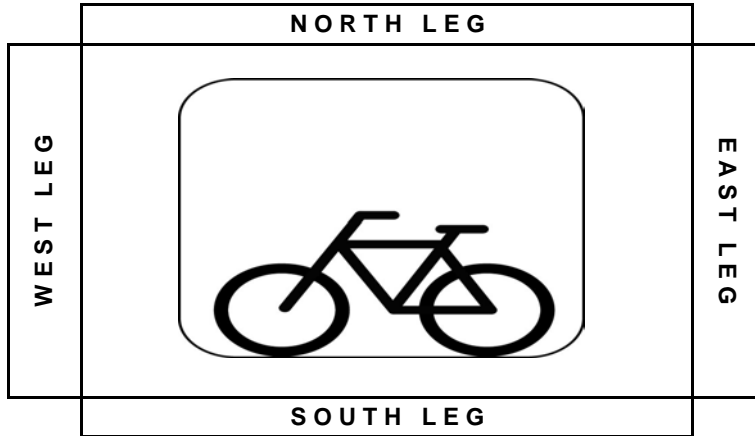
PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

	Start:	End:
AM		
NOON	10:00	14:00
PM		

DAY: Saturday

AM	0	0	0
NOON	0	2	0
PM	0	0	0

AM	NOON	PM
0	4	0
0	0	0
0	0	0



AM	NOON	PM
0	0	0
0	0	0
0	0	0

AM	0	0	0
NOON	2	0	0
PM	0	0	0

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-8004-010
 N/S Street: Alulike St
 E/W Street: Kaonoulu St
 DATE: 1/16/2016
 CITY: Kihei

DAY: Saturday

NOON

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
10:00 AM	0	0	0	0	0	1	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	1	1	0	0	0	0
10:45 AM	0	0	1	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	2
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	1	1	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	1	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
TOTALS	1	1	2	2	0	1	0	2

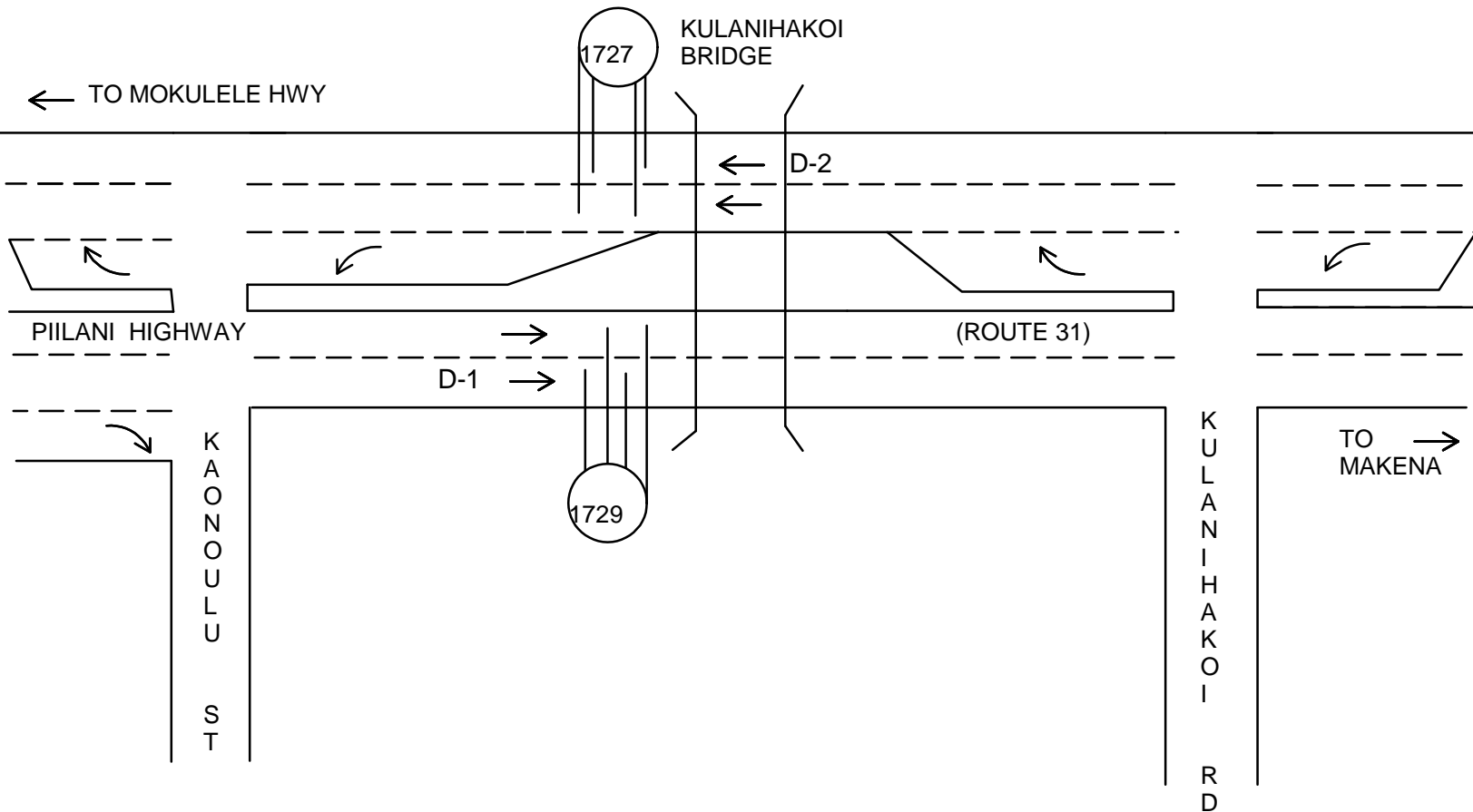
BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
10:00 AM	0	0	0	0	0	0	1	1	0	0	0	0
10:15 AM	0	0	1	1	0	1	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	1	0	0	0	0	0
11:00 AM	2	0	0	0	2	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	3	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	1	0	0	0	0	0
12:00 PM	0	0	0	0	0	2	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	2	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	2	0	1	1	2	5	7	1	0	0	0	0



ISLAND: MAUI

AREA: KIHEI



Station No: B74 0031 00000

Station Location:			
Piilani Highway between Kaonoulu Street and Kulanihakoi Road at North side of Kulanihakoi Bridge			
Station Mileage:	1.63	GPS Coord (Latitude):	20.75801 N
		GPS Coord (Longitude):	156.44873 W
Begin Survey (Date/Time):	5-6-13 0000	End Survey (Date/Time):	5-9-13 0000
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:	CA, LT	Module No.:	

HPMS DATA							
Segment Description:							
PIILANI HIGHWAY - MOKULELE HIGHWAY TO KILOHANA DRIVE							
Segment Begin LRS	0.00	Segment End LRS	5.91	Length	5.91		
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route	
				No.	Mile	D-2 = Direction to Beginning of Route	
PIILANI HIGHWAY	S	14	2	31	1.63	D-1	TO KULA HIGHWAY
						D-2	TO MOKULELE HIGHWAY

Sketch By: EPJ Date: 6/6/2011 SLD: 2009

Run Date: 2014/06/17

Hawaii Department of Transportation
Highways Division **Highways Planning Survey Section**

2013 Program Count - Summary

Site ID: B74003100000

Town: Maui

DIR 1: +MP

DIR 2:-MP

Final AADT: 33700

Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER

Count Type: CLASS

Counter Type: Tube

Route No: 31

Location: Piilani Hwy btwn Kaonoulu St _Kulanihakai Rd @ North side of Kulanihakai Bridge

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 05/07/2013															
12:00-12:15	7	14	21	06:00-06:15	355	305	660	12:00-12:15	286	263	549	06:00-06:15	221	160	381
12:15-12:30	7	13	20	06:15-06:30	460	368	828	12:15-12:30	309	271	580	06:15-06:30	210	173	383
12:30-12:45	10	10	20	06:30-06:45	500	321	821	12:30-12:45	308	265	573	06:30-06:45	217	165	382
12:45-01:00	6	19	25	06:45-07:00	417	299	716	12:45-01:00	326	301	627	06:45-07:00	161	126	287
01:00-01:15	6	11	17	07:00-07:15	375	232	607	01:00-01:15	330	300	630	07:00-07:15	170	124	294
01:15-01:30	14	12	26	07:15-07:30	353	264	617	01:15-01:30	340	348	688	07:15-07:30	170	121	291
01:30-01:45	9	18	27	07:30-07:45	275	276	551	01:30-01:45	368	305	673	07:30-07:45	145	120	265
01:45-02:00	15	16	31	07:45-08:00	325	248	573	01:45-02:00	384	343	727	07:45-08:00	145	101	246
02:00-02:15	10	12	22	08:00-08:15	256	221	477	02:00-02:15	329	344	673	08:00-08:15	160	113	273
02:15-02:30	16	18	34	08:15-08:30	254	251	505	02:15-02:30	362	362	724	08:15-08:30	147	136	283
02:30-02:45	33	28	61	08:30-08:45	233	302	535	02:30-02:45	332	354	686	08:30-08:45	163	100	263
02:45-03:00	20	18	38	08:45-09:00	277	275	552	02:45-03:00	367	372	739	08:45-09:00	101	91	192
03:00-03:15	29	13	42	09:00-09:15	216	275	491	03:00-03:15	382	373	755	09:00-09:15	126	96	222
03:15-03:30	45	24	69	09:15-09:30	233	264	497	03:15-03:30	402	431	833	09:15-09:30	107	90	197
03:30-03:45	62	18	80	09:30-09:45	236	250	486	03:30-03:45	397	423	820	09:30-09:45	80	86	166
03:45-04:00	62	36	98	09:45-10:00	269	260	529	03:45-04:00	386	345	731	09:45-10:00	70	86	156
04:00-04:15	68	58	126	10:00-10:15	235	251	486	04:00-04:15	414	316	730	10:00-10:15	48	49	97
04:15-04:30	92	60	152	10:15-10:30	256	256	512	04:15-04:30	329	363	692	10:15-10:30	58	79	137
04:30-04:45	113	63	176	10:30-10:45	283	267	550	04:30-04:45	286	330	616	10:30-10:45	20	59	79
04:45-05:00	164	81	245	10:45-11:00	261	258	519	04:45-05:00	320	274	594	10:45-11:00	32	38	70
05:00-05:15	165	95	260	11:00-11:15	258	278	536	05:00-05:15	279	194	473	11:00-11:15	23	35	58
05:15-05:30	253	129	382	11:15-11:30	238	297	535	05:15-05:30	248	198	446	11:15-11:30	11	43	54
05:30-05:45	287	190	477	11:30-11:45	298	280	578	05:30-05:45	268	198	466	11:30-11:45	17	20	37
05:45-06:00	331	226	557	11:45-12:00	294	216	510	05:45-06:00	232	197	429	11:45-12:00	17	27	44

AM COMMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	PM COMMUTER PERIOD (15:00-19:00)	DIR 1	DIR 2
TWO DIRECTIONAL PEAK		TWO DIRECTIONAL PEAK		TWO DIRECTIONAL PEAK	
AM - PEAK HR TIME		06:00 AM to 07:00 AM		PM - PEAK HR TIME	
AM - PEAK HR VOLUME		1732	1293	3025	03:00 PM to 04:00 PM
AM - K FACTOR (%)				1567	1572
AM - D (%)		57.26	42.74	100.00	8.49
DIRECTIONAL PEAK		DIRECTIONAL PEAK		DIRECTIONAL PEAK	
AM - PEAK HR TIME		06:15 AM to 07:15 AM	06:00 AM to 07:00 AM	49.92	50.08
AM - PEAK HR VOLUME		1752	1293	100.00	100.00
				03:15 PM to 04:15 PM	
				03:00 PM to 04:00 PM	
				1599	
				1572	

AM PERIOD (00:00-12:00)	PM PERIOD (12:00-24:00)
TWO DIRECTIONAL PEAK	
AM - PEAK HR TIME	
AM - PEAK HR VOLUME	
AM - K FACTOR (%)	
AM - D (%)	
TWO DIRECTIONAL PEAK	
PM - PEAK HR TIME	
PM - PEAK HR VOLUME	
PM - K FACTOR (%)	
PM - D (%)	

NON-COMMUTER PERIOD (09:00-15:00)	6-HR, 12-HR, 24-HR PERIODS	DIR 1	DIR 2	Total
TWO DIRECTIONAL PEAK				
PEAK HR TIME		02:00 PM to 03:00 PM		AM 6-HR PERIOD (06:00-12:00)
PEAK HR VOLUME		1390	1432	2822
				AM 12-HR PERIOD (00:00-12:00)
				PM 6-HR PERIOD (12:00-18:00)
				PM 12-HR PERIOD (12:00-24:00)
				24 HOUR PERIOD
				D (%)

Run Date: 2014/06/17

Hawaii Department of Transportation
Highways Division **Highways Planning Survey Section**

2013 Program Count - Summary

Site ID: B74003100000

Town: Maui

DIR 1: +MP

DIR 2:-MP

Final AADT: 33700

Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER

Count Type: CLASS

Counter Type: Tube

Route No: 31

Location: Piilani Hwy btwn Kaonoulu St _Kulanihakai Rd @ North side of Kulanihakai Bridge

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 05/08/2013															
12:00-12:15	9	14	23	06:00-06:15	357	237	594	12:00-12:15	341	162	503	06:00-06:15	217	114	331
12:15-12:30	13	19	32	06:15-06:30	447	280	727	12:15-12:30	346	178	524	06:15-06:30	179	104	283
12:30-12:45	10	19	29	06:30-06:45	452	274	726	12:30-12:45	313	192	505	06:30-06:45	214	97	311
12:45-01:00	5	15	20	06:45-07:00	404	248	652	12:45-01:00	312	190	502	06:45-07:00	192	81	273
01:00-01:15	11	18	29	07:00-07:15	351	247	598	01:00-01:15	298	168	466	07:00-07:15	176	81	257
01:15-01:30	12	20	32	07:15-07:30	352	208	560	01:15-01:30	309	197	506	07:15-07:30	172	116	288
01:30-01:45	12	15	27	07:30-07:45	272	219	491	01:30-01:45	333	180	513	07:30-07:45	142	88	230
01:45-02:00	13	12	25	07:45-08:00	306	175	481	01:45-02:00	361	175	536	07:45-08:00	174	83	257
02:00-02:15	18	5	23	08:00-08:15	260	167	427	02:00-02:15	340	181	521	08:00-08:15	172	80	252
02:15-02:30	16	15	31	08:15-08:30	265	174	439	02:15-02:30	345	211	556	08:15-08:30	152	85	237
02:30-02:45	30	17	47	08:30-08:45	237	164	401	02:30-02:45	384	182	566	08:30-08:45	153	79	232
02:45-03:00	27	14	41	08:45-09:00	242	184	426	02:45-03:00	399	230	629	08:45-09:00	130	74	204
03:00-03:15	31	17	48	09:00-09:15	255	147	402	03:00-03:15	392	219	611	09:00-09:15	111	54	165
03:15-03:30	39	11	50	09:15-09:30	272	172	444	03:15-03:30	393	251	644	09:15-09:30	105	83	188
03:30-03:45	64	22	86	09:30-09:45	275	172	447	03:30-03:45	377	236	613	09:30-09:45	95	60	155
03:45-04:00	48	25	73	09:45-10:00	250	171	421	03:45-04:00	355	219	574	09:45-10:00	88	56	144
04:00-04:15	65	28	93	10:00-10:15	241	178	419	04:00-04:15	320	211	531	10:00-10:15	52	43	95
04:15-04:30	87	31	118	10:15-10:30	244	176	420	04:15-04:30	339	176	515	10:15-10:30	43	62	105
04:30-04:45	116	50	166	10:30-10:45	218	159	377	04:30-04:45	318	161	479	10:30-10:45	43	38	81
04:45-05:00	148	63	211	10:45-11:00	271	157	428	04:45-05:00	312	183	495	10:45-11:00	27	27	54
05:00-05:15	179	88	267	11:00-11:15	253	151	404	05:00-05:15	292	156	448	11:00-11:15	23	20	43
05:15-05:30	241	132	373	11:15-11:30	305	169	474	05:15-05:30	299	138	437	11:15-11:30	24	29	53
05:30-05:45	288	160	448	11:30-11:45	291	184	475	05:30-05:45	252	130	382	11:30-11:45	14	21	35
05:45-06:00	316	207	523	11:45-12:00	356	152	508	05:45-06:00	194	103	297	11:45-12:00	11	16	27

AM COMMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	PM COMMUTER PERIOD (15:00-19:00)	DIR 1	DIR 2
TWO DIRECTIONAL PEAK		TWO DIRECTIONAL PEAK		TWO DIRECTIONAL PEAK	
AM - PEAK HR TIME	06:15 AM to 07:15 AM		PM - PEAK HR TIME	03:00 PM to 04:00 PM	
AM - PEAK HR VOLUME	1654	1049	2703	1517	925
AM - K FACTOR (%)			8.66		
AM - D (%)	61.19	38.81	100.00	62.12	37.88
DIRECTIONAL PEAK		DIRECTIONAL PEAK		DIRECTIONAL PEAK	
AM - PEAK HR TIME	06:00 AM to 07:00 AM	06:15 AM to 07:15 AM	PM - PEAK HR TIME	03:00 PM to 04:00 PM	03:00 PM to 04:00 PM
AM - PEAK HR VOLUME	1660	1049	1517	925	

AM PERIOD (00:00-12:00)	PM PERIOD (12:00-24:00)
TWO DIRECTIONAL PEAK	
AM - PEAK HR TIME	06:15 AM to 07:15 AM
AM - PEAK HR VOLUME	1654
AM - K FACTOR (%)	8.66
AM - D (%)	61.19
TWO DIRECTIONAL PEAK	
PM - PEAK HR TIME	02:45 PM to 03:45 PM
PM - PEAK HR VOLUME	1561
PM - K FACTOR (%)	8.00
PM - D (%)	62.52

NON-COMMUTER PERIOD (09:00-15:00)	6-HR, 12-HR, 24-HR PERIODS	DIR 1	DIR 2	Total
TWO DIRECTIONAL PEAK		AM 6-HR PERIOD (06:00-12:00)		
PEAK HR TIME	02:00 PM to 03:00 PM	7,176	4,565	11,741
PEAK HR VOLUME		8,974	5,582	14,556
DIRECTIONAL PEAK		AM 12-HR PERIOD (00:00-12:00)		
PEAK HR TIME	02:00 PM to 03:00 PM	7,924	4,429	12,353
PEAK HR VOLUME	02:00 PM to 03:00 PM	10,633	6,020	16,653
	02:00 PM to 03:00 PM	19,607	11,602	31,209
		62.82	37.18	100.00

Run Date: 2014/06/17

Hawaii Department of Transportation
Highways Division
Highways Planning Survey Section

Vehicle Classification Data Summary
2013

Site ID: B74003100000

Route No: 31

Date From: 2013/05/07 0:00

Town: Maui

Direction: +MP

Date To: 2013/05/08 23:45

Location: Piilani Hwy btwn Kaonoulu St _Kulanihakai Rd @ North side of Kulanihakai Bridge

Functional Classification: 14 URBAN:PRINCIPAL ARTERIAL - OTHER
REPORT TOTALS - 48 HOURS RECORDED

	VOLUME	%	NUMBER OF AXLES
Cycles	361	0.53%	723
PC	58543	85.84%	117086
2A-4T	7434	10.90%	14868
<hr/>			
LIGHT VEHICLE TOTALS	66338	97.27%	132677
<u>HEAVY VEHICLES</u>			
Bus	483	0.71%	1207
<u>SINGLE UNIT TRUCK</u>			
2A-6T	823	1.21%	1646
3A-SU	224	0.33%	672
4A-SU	2	0.00%	8
<u>SINGLE-TRAILER TRUCKS</u>			
4A-ST	152	0.22%	608
5A-ST	169	0.25%	845
6A-ST	8	0.01%	48
<u>MULTI-TRAILER TRUCKS</u>			
5A-MT	0	0.00%	0
6A-MT	0	0.00%	0
7A-MT	0	0.00%	0
<hr/>			
HEAVY VEHICLE TOTALS	1861	2.73%	5034
<hr/>			
CLASSIFIED VEHICLES TOTALS	68199 (A)	100.00%	137711 (B)
UNCLASSIFIED VEHICLES TOTALS	-2	-0.00%	

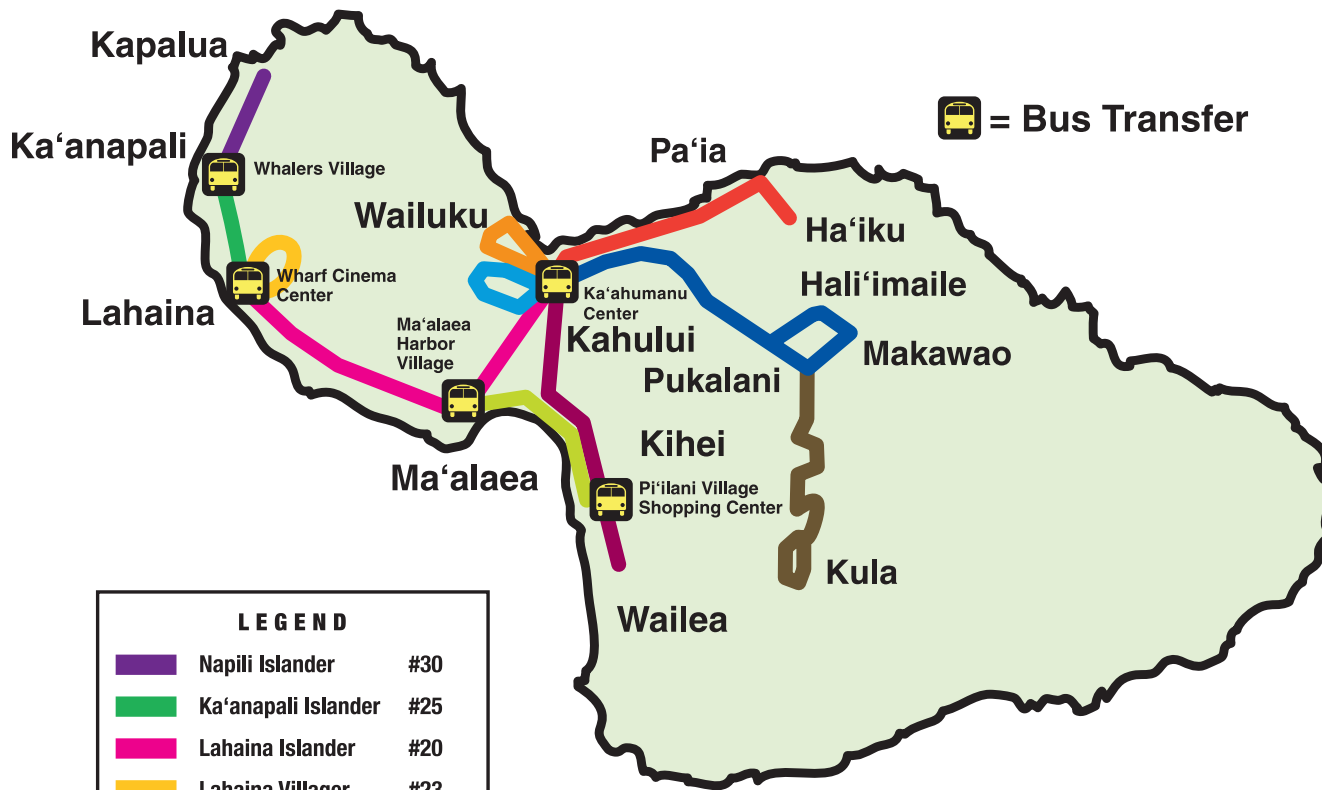
AXLE
CORRECTION
FACTOR (A/C) = 0.990

ROADTUBE
EQUIVALENT(B/2) = 68856 (C)

PEAK HOUR VOLUME : 3139 2013/05/07 15:00	PEAK HOUR TRUCK VOLUME	% TOTAL PEAK HOUR VOLUME	24 HOUR TRUCK VOLUME	AADT	% OF AADT	HPMS K-FACTOR (PEAK/AADT) (ITEM 66)
SINGLE UNIT TRUCKS (TYPE 4-7)	60	(65A-1) 1.91%	766	33700	(65A-2) 2.27%	9.31%
COMBINATION (TYPE 8-13)	16	(65B-1) 0.51%	164		(65B-2) 0.49%	9.31%

Appendix C

County of Maui Bus Routes and Timetable



LEGEND		
	Napili Islander	#30
	Ka'anapali Islander	#25
	Lahaina Islander	#20
	Lahaina Villager	#23
	Kihei Villager	#15
	Kihei Islander	#10
	Wailuku Loop	#1 & 2
	Kahului Loop	#5 & 6
	Upcountry Islander	#40
	Haiku Islander	#35
	Kula Villager	#39



maui bus

Operated By
Roberts Hawaii
 (808) 871-4838

GENERAL INFORMATION

The Maui Bus public transit service consists of thirteen bus routes, all operated by Roberts Hawaii. These routes are funded by the County of Maui and provide service in and between various Central, South, West, Haiku, Kula and Upcountry Maui communities. All of the routes are operated seven days a week, including all holidays. No transfers are given on any of the routes.

MAHALO NUI LOA!



Alan Arakawa
 Mayor, Maui County

FARES

All routes cost \$2.00 per boarding. Infants under 2 years old, riding on the lap of an accompanying adult travel free. Daily and monthly passes are also available.

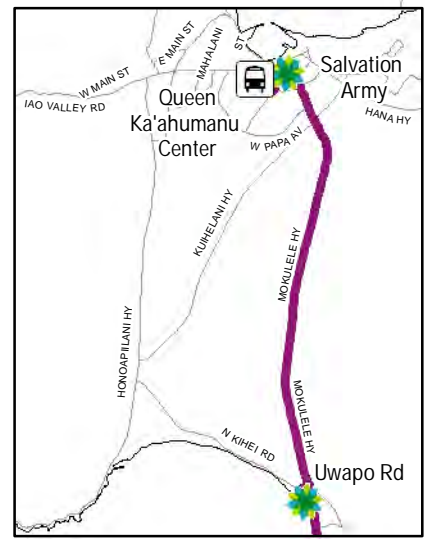
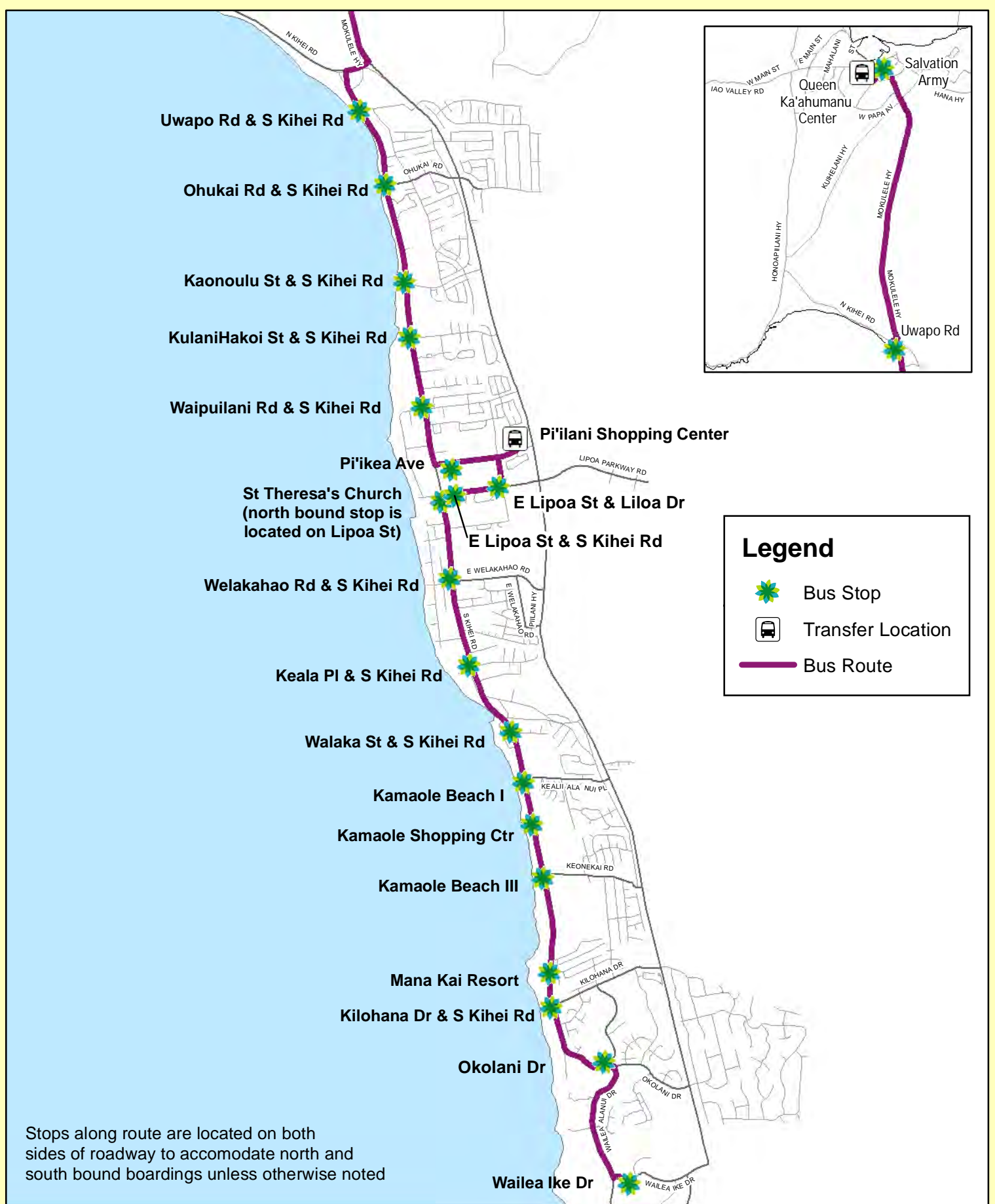
COMMUTER SERVICE

The County of Maui also funds four commuter service routes, all operated by Roberts Hawaii. The routes are called the Haiku-Wailea Commuter, Makawao-Kapalua Commuter, Wailuku-Kapalua Commuter, and the Kihei-Kapalua Commuter.

DUE TO SPACE LIMITATIONS, NOT ALL STOPS ARE LISTED ON THE SCHEDULE. Please refer to the County of Maui website at www.mauicounty.gov/bus to view route maps.

CONTACT INFORMATION

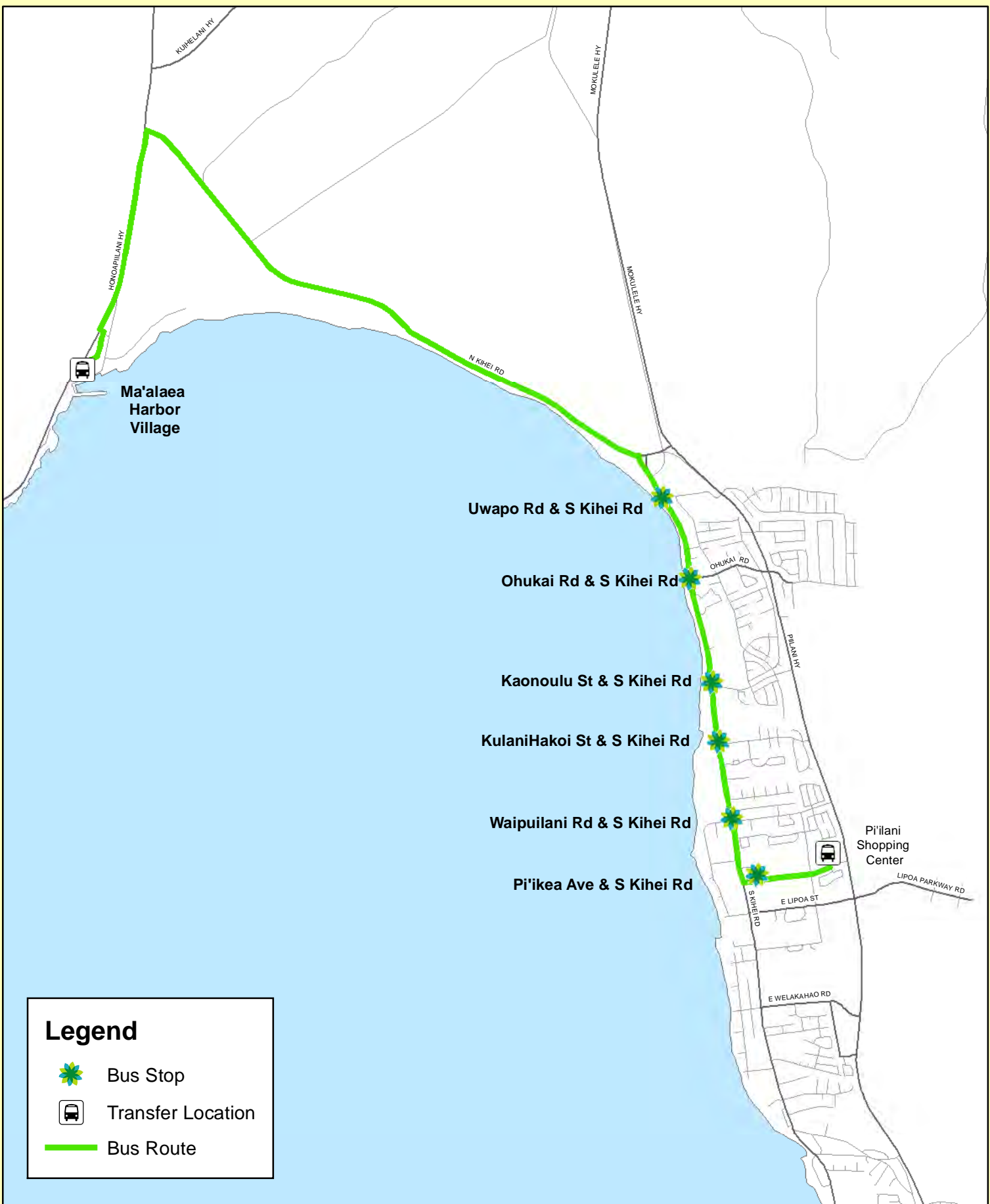
www.mauicounty.gov/bus
public.transit@mauicounty.gov
(808) 871-4838






maui bus
 2145 Kaohu Street, Suite 102
 Wailuku, HI 96793



Kihei Islander Route 10



Legend

-  Bus Stop
-  Transfer Location
-  Bus Route



maui bus
 2145 Kaohu Street, Suite 102
 Wailuku, HI 96793



0 0.5 Miles

**Kihei Villager
 Route 15**

WAILUKU LOOP ROUTE #1

Queen Ka'ahumanu Center	Maui Memorial Hospital	Maui Lani Parkway	Ka Hale A Ke Ola	State Office Building	Malamalama Health Clinic	Wailuku Post Office	Pi'ihana Terrace	Makaala Dr. Fronting Hale Mahaolu	Waiehu Heights	Hawaiian Homes	Eha St. Fronting Sack N Save	Wailuku Community Center	Kanaloa Ave. / Little League Field	Queen Ka'ahumanu Center
6:30	6:37	6:39	6:47	6:52	6:55	6:58	7:03	7:08	7:11	7:12	7:13	7:15	7:21	7:30
7:30	7:37	7:39	7:47	7:52	7:55	7:58	8:03	8:08	8:11	8:12	8:13	8:15	8:21	8:30
8:30	8:37	8:39	8:47	8:52	8:55	8:58	9:03	9:08	9:11	9:12	9:13	9:15	9:21	9:30
9:30	9:37	9:39	9:47	9:52	9:55	9:58	10:03	10:08	10:11	10:12	10:13	10:15	10:21	10:30
10:30	10:37	10:39	10:47	10:52	10:55	10:58	11:03	11:08	11:11	11:12	11:13	11:15	11:21	11:30
11:30	11:37	11:39	11:47	11:52	11:55	11:58	12:03	12:08	12:11	12:12	12:13	12:15	12:21	12:30
12:30	12:37	12:39	12:47	12:52	12:55	12:58	1:03	1:08	1:11	1:12	1:13	1:15	1:21	1:30
1:30	1:37	1:39	1:47	1:52	1:55	1:58	2:03	2:08	2:11	2:12	2:13	2:15	2:21	2:30
2:30	2:37	2:39	2:47	2:52	2:55	2:58	3:03	3:08	3:11	3:12	3:13	3:15	3:21	3:30
3:30	3:37	3:39	3:47	3:52	3:55	3:58	4:03	4:08	4:11	4:12	4:13	4:15	4:21	4:30
4:30	4:37	4:39	4:47	4:52	4:55	4:58	5:03	5:08	5:11	5:12	5:13	5:15	5:21	5:30
5:30	5:37	5:39	5:47	5:52	5:55	5:58	6:03	6:08	6:11	6:12	6:13	6:15	6:21	6:30
6:30	6:37	6:39	6:47	6:52	6:55	6:58	7:03	7:08	7:11	7:12	7:13	7:15	7:21	7:30
7:30	7:37	7:39	7:47	7:52	7:55	7:58	8:03	8:08	8:11	8:12	8:13	8:15	8:21	8:30
8:30	8:37	8:39	8:47	8:52	8:55	8:58	9:03	9:08	9:11	9:12	9:13	9:15	9:21	9:30

WAILUKU LOOP ROUTE #2 (reverse)

Queen Ka'ahumanu Center	Kanaloa Avenue / Near Kaahumanu Ave.	Wailuku Community Center	Eha Street Fronting Sack N Save	Hawaiian Homes	Waiehu Heights	Makaala Drive Fronting Hale Mahaolu	Pi'ihana Terrace	Wailuku Post Office	Malamalama Health Clinic	Ka Hale A Ke Ola	State Office Building	Maui Lani Parkway	Maui Memorial Hospital	Queen Ka'ahumanu Center
7:00	7:03	7:08	7:11	7:15	7:17	7:19	7:24	7:29	7:32	7:37	7:43	7:46	7:49	8:00
8:00	8:03	8:08	8:11	8:15	8:17	8:19	8:24	8:29	8:32	8:37	8:43	8:46	8:49	9:00
9:00	9:03	9:08	9:11	9:15	9:17	9:19	9:24	9:29	9:32	9:37	9:43	9:46	9:49	10:00
10:00	10:03	10:08	10:11	10:15	10:17	10:19	10:24	10:29	10:32	10:37	10:43	10:46	10:49	11:00
11:00	11:03	11:08	11:11	11:15	11:17	11:19	11:24	11:29	11:32	11:37	11:43	11:46	11:49	12:00
12:00	12:03	12:08	12:11	12:15	12:17	12:19	12:24	12:29	12:32	12:37	12:43	12:46	12:49	1:00
1:00	1:03	1:08	1:11	1:15	1:17	1:19	1:24	1:29	1:32	1:37	1:43	1:46	1:49	2:00
2:00	2:03	2:08	2:11	2:15	2:17	2:19	2:24	2:29	2:32	2:37	2:43	2:46	2:49	3:00
3:00	3:03	3:08	3:11	3:15	3:17	3:19	3:24	3:29	3:32	3:37	3:43	3:46	3:49	4:00
4:00	4:03	4:08	4:11	4:15	4:17	4:19	4:24	4:29	4:32	4:37	4:43	4:46	4:49	5:00
5:00	5:03	5:08	5:11	5:15	5:17	5:19	5:24	5:29	5:32	5:37	5:43	5:46	5:49	6:00
6:00	6:03	6:08	6:11	6:15	6:17	6:19	6:24	6:29	6:32	6:37	6:43	6:46	6:49	7:00
7:00	7:03	7:08	7:11	7:15	7:17	7:19	7:24	7:29	7:32	7:37	7:43	7:46	7:49	8:00
8:00	8:03	8:08	8:11	8:15	8:17	8:19	8:24	8:29	8:32	8:37	8:43	8:46	8:49	9:00
9:00	9:03	9:08	9:11	9:15	9:17	9:19	9:24	9:29	9:32	9:37	9:43	9:46	9:49	10:00

HAIKU ISLANDER ROUTE #35

Queen Ka'ahumanu Center	Kahului Salvation Army / Kamehameha Ave	Kamehameha Ave / Ho'ohana St	Kahului Airport Pick-Up Zone #3	Paia Town	Haiku Marketplace	Shelter Next to Haiku Comm. Center	Paia Town	Kahului Airport Pick-Up Zone #3	Kamehameha Ave / Maui Mall Entrance	Kamehameha Ave / Kahului Shop g Ctr (rear)	Queen Ka'ahumanu Center
5:30	5:33	5:34	5:40	5:53	6:11	6:17	6:29	6:40	6:47	6:48	7:00
7:00	7:03	7:04	7:10	7:23	7:41	7:47	7:59	8:10	8:17	8:18	8:30
8:30	8:33	8:34	8:40	8:53	9:11	9:17	9:29	9:40	9:47	9:48	10:00
10:00	10:03	10:04	10:10	10:23	10:41	10:47	10:59	11:10	11:17	11:18	11:30
11:30	11:33	11:34	11:40	11:53	12:11	12:17	12:29	12:40	12:47	12:48	1:00
1:00	1:03	1:04	1:10	1:23	1:41	1:47	1:59	2:10	2:17	2:18	2:30
2:30	2:33	2:34	2:40	2:53	3:11	3:17	3:29	3:40	3:47	3:48	4:00
4:00	4:03	4:04	4:10	4:23	4:41	4:47	4:59	5:10	5:17	5:18	5:30
5:30	5:33	5:34	5:40	5:53	6:11	6:17	6:29	6:40	6:47	6:48	7:00
7:00	7:03	7:04	7:10	7:23	7:41	7:47	7:59	8:10	8:17	8:18	8:30
8:30	8:33	8:34	8:40	8:53	9:11	9:17	9:29	9:40	9:47	9:48	10:00

KAHULUI LOOP ROUTE #5

Queen Ka'ahumanu Center	Wahinepio Ave / UH Maui College Parkg Entrance	Roselani Place	Onhe'e Ave. / S. Papa Ave.	Hale Mahaolu Elua	Kamehameha Ave. / Moloika 'Akau St.	Luana Gardens	W. Papa Ave. / La au St.	Pakaula St. / Wai-Mart back Entrance	Maui Marketplace Food Court	K-Mart	Kamehameha Ave. / Maui Mall Entrance	Kahului Shopping Center	Queen Ka'ahumanu Center
6:30	6:38	6:41	6:44	6:47	6:49	6:51	6:53	7:00	7:03	7:08	7:14	7:17	7:30
7:30	7:38	7:41	7:44	7:47	7:49	7:51	7:53	8:00	8:03	8:08	8:14	8:17	8:30
8:30	8:38	8:41	8:44	8:47	8:49	8:51	8:53	9:00	9:03	9:08	9:14	9:17	9:30
9:30	9:38	9:41	9:44	9:47	9:49	9:51	9:53	10:00	10:03	10:08	10:14	10:17	10:30
10:30	10:38	10:41	10:44	10:47	10:49	10:51	10:53	11:00	11:03	11:08	11:14	11:17	11:30
11:30	11:38	11:41	11:44	11:47	11:49	11:51	11:53	12:00	12:03	12:08	12:14	12:17	12:30
12:30	12:38	12:41	12:44	12:47	12:49	12:51	12:53	1:00	1:03	1:08	1:14	1:17	1:30
1:30	1:38	1:41	1:44	1:47	1:49	1:51	1:53	2:00	2:03	2:08	2:14	2:17	2:30
2:30	2:38	2:41	2:44	2:47	2:49	2:51	2:53	3:00	3:03	3:08	3:14	3:17	3:30
3:30	3:38	3:41	3:44	3:47	3:49	3:51	3:53	4:00	4:03	4:08	4:14	4:17	4:30
4:30	4:38	4:41	4:44	4:47	4:49	4:51	4:53	5:00	5:03	5:08	5:14	5:17	5:30
5:30	5:38	5:41	5:44	5:47	5:49	5:51	5:53	6:00	6:03	6:08	6:14	6:17	6:30
6:30	6:38	6:41	6:44	6:47	6:49	6:51	6:53	7:00	7:03	7:08	7:14	7:17	7:30
7:30	7:38	7:41	7:44	7:47	7:49	7:51	7:53	8:00	8:03	8:08	8:14	8:17	8:30
8:30	8:38	8:41	8:44	8:47	8:49	8:51	8:53	9:00	9:03	9:08	9:14	9:17	9:30

KAHULUI LOOP ROUTE #6 (reverse)

Queen Ka'ahumanu Center	Kahului Shopping Center	Kamehameha Ave. / Ho'ohana St	K-Mart	Maui Marketplace Food Court	Pakaula St. / Past Home Depot Entrance	W. Papa Ave. / La au St.	Luana Gardens	Kamehameha Ave. / Moloika 'Akau St.	Hale Mahaolu Elua	Onhe'e / S. Papa Ave.	Roselani Place	Wahinepio Ave. / MACC	Queen Ka'ahumanu Center
7:00	7:08	7:10	7:16	7:25	7:29	7:35	7:37	7:38	7:40	7:43	7:45	7:48	8:00
8:00	8:08	8:10	8:16	8:25	8:29	8:35	8:37	8:38	8:40	8:43	8:45	8:48	9:00
9:00	9:08	9:10	9:16	9:25	9:29	9:35	9:37	9:38	9:40	9:43	9:45	9:48	10:00
10:00	10:08	10:10	10:16	10:25	10:29	10:35	10:37	10:38	10:40	10:43	10:45	10:48	11:00
11:00	11:08	11:10	11:16	11:25	11:29	11:35	11:37	11:38	11:40	11:43	11:45	11:48	12:00
12:00	12:08	12:10	12:16	12:25	12:29	12:35	12:37	12:38	12:40	12:43	12:45	12:48	1:00
1:00	1:08	1:10	1:16	1:25	1:29	1:35	1:37	1:38	1:40	1:43	1:45	1:48	2:00
2:00	2:08	2:10	2:16	2:25	2:29	2:35	2:37	2:38	2:40	2:43	2:45	2:48	3:00
3:00	3:08	3:10	3:16	3:25	3:29	3:35	3:37	3:38	3:40	3:43	3:45	3:48	4:00
4:00	4:08	4:10	4:16	4:25	4:29	4:35	4:37	4:38	4:40	4:43	4:45	4:48	5:00
5:00	5:08	5:10	5:16	5:25	5:29	5:35	5:37	5:38	5:40	5:43	5:45	5:48	6:00
6:00	6:08	6:10	6:16	6:25	6:29	6:35	6:37	6:38	6:40	6:43	6:45	6:48	7:00
7:00	7:08	7:10	7:16	7:25	7:29	7:35	7:37	7:38	7:40	7:43	7:45	7:48	8:00
8:00	8:08	8:10	8:16	8:25	8:29	8:35	8:37	8:38	8:40	8:43	8:45	8:48	9:00
9:00	9:08	9:10	9:16	9:25	9:29	9:35	9:37	9:38	9:40	9:43	9:45	9:48	10:00

UPCOUNTRY ISLANDER ROUTE #40

Queen Ka'ahumanu Center	Kahului Salvation Army / Kamehameha Ave	Kamehameha Ave / Ho'ohana St	Kahului Airport Pick-Up Zone #3	Pukalani Street near Community Ctr Entrance	Kulamalu	Across Makawao Library	Hali'imalie	Kahului Airport Pick-Up Zone #3	Kamehameha Ave / Maui Mall Entrance	Kamehameha Ave / Kahului Shop g Ctr (rear)	Queen Ka'ahumanu Center
6:00	6:03	6:04	6:10	6:30	6:38	6:48	6:53	7:11	7:17	7:18	7:30
7:30	7:33	7:34	7:40	8:00	8:08	8:18	8:23	8:41	8:47	8:48	9:00
9:00	9:03	9:04	9:10	9:30	9:38	9:48	9:53	10:11	10:17	10:18	10:30
10:30	10:33	10:34	10:40	11:00	11:08	11:18	11:23	11:41	11:47	11:48	12:00
12:00	12:03	12:04	12:10	12:30	12:38	12:48	12:53	1:11	1:17	1:18	1:30
1:30	1:33	1:34	1:40	2:00	2:08	2:18	2:23	2:41	2:47	2:48	3:00
3:00	3:03	3:04	3:10	3:30	3:38	3:48	3:53	4:11	4:17	4:18	4:30
4:30	4:33	4:34	4:40	5:00	5:08	5:18	5:23	5:41	5:47	5:48	6:00
6:00	6:03	6:04	6:10	6:30	6:38	6:48	6:53	7:11	7:17	7:18	7:30
7:30	7:33	7:34	7:40	8:00	8:08	8:					

KIHEI ISLANDER ROUTE #10

Queen Ka'ahumanu Center	Kahului Salvation Army / Kamehameha Ave	Uwapa / S. Kihei Rd.	Kulanihakoi St. / S. Kihei Rd.	Pili'ani Shopping Center	Keala Pl. / S. Kihei Rd. Kalaheo Park	Kamaole Beach III	Waialea Ike Drive	Kamaole Beach III	Keala Pl. / S. Kihei Rd. Near Hoodland	Pili'ani Shopping Center	Kulanihakoi St. / S. Kihei Rd.	Uwapa / S. Kihei Rd.	Kamehameha Ave / Kahului Shop'g Ctr (rear)	Queen Ka'ahumanu Center
5:30	5:35	5:50	5:55	6:03	6:12	6:20	6:27	6:34	6:42	6:50	6:57	7:02	7:18	7:30
6:30	6:35	6:50	6:55	7:03	7:12	7:20	7:27	7:34	7:42	7:50	7:57	8:02	8:18	8:30
7:30	7:35	7:50	7:55	8:03	8:12	8:20	8:27	8:34	8:42	8:50	8:57	9:02	9:18	9:30
8:30	8:35	8:50	8:55	9:03	9:12	9:20	9:27	9:34	9:42	9:50	9:57	10:02	10:18	10:30
9:30	9:35	9:50	9:55	10:03	10:12	10:20	10:27	10:34	10:42	10:50	10:57	11:02	11:18	11:30
10:30	10:35	10:50	10:55	11:03	11:12	11:20	11:27	11:34	11:42	11:50	11:57	12:02	12:18	12:30
11:30	11:35	11:50	11:55	12:03	12:12	12:20	12:27	12:34	12:42	12:50	12:57	1:02	1:18	1:30
12:30	12:35	12:50	12:55	1:03	1:12	1:20	1:27	1:34	1:42	1:50	1:57	2:02	2:18	2:30
1:30	1:35	1:50	1:55	2:03	2:12	2:20	2:27	2:34	2:42	2:50	2:57	3:02	3:18	3:30
2:30	2:35	2:50	2:55	3:03	3:12	3:20	3:27	3:34	3:42	3:50	3:57	4:02	4:18	4:30
3:30	3:35	3:50	3:55	4:03	4:12	4:20	4:27	4:34	4:42	4:50	4:57	5:02	5:18	5:30
4:30	4:35	4:50	4:55	5:03	5:12	5:20	5:27	5:34	5:42	5:50	5:57	6:02	6:18	6:30
5:30	5:35	5:50	5:55	6:03	6:12	6:20	6:27	6:34	6:42	6:50	6:57	7:02	7:18	7:30
6:30	6:35	6:50	6:55	7:03	7:12	7:20	7:27	7:34	7:42	7:50	7:57	8:02	8:18	8:30
7:30	7:35	7:50	7:55	8:03	8:12	8:20	8:27	8:34	8:42	8:50	8:57	9:02	9:18	9:30

KIHEI VILLAGER ROUTE #15

Ma'alea Harbor Village	Uwapa Rd. / S. Kihei Rd.	Ohukela St. / S. Kihei Rd.	Kaonoulu / S. Kihei Rd.	Kulanihakoi / S. Kihei Rd.	Waijuli'ani Rd. / S. Kihei Rd.	Pili'ani Shopping Center	Pili'ani Shopping Center	Waijuli'ani Rd. / S. Kihei Rd.	Kulanihakoi / S. Kihei Rd.	Kaonoulu / S. Kihei Rd.	Ohukela St. / S. Kihei Rd.	Uwapa Rd. / S. Kihei Rd.	Ma'alea Harbor Village	
6:05	6:17	6:19	6:21	6:22	6:24	6:26	6:30	6:33	6:35	6:36	6:37	6:39	6:41	6:55
7:05	7:17	7:19	7:21	7:22	7:24	7:26	7:30	7:33	7:35	7:36	7:37	7:39	7:41	7:55
8:05	8:17	8:19	8:21	8:22	8:24	8:26	8:30	8:33	8:35	8:36	8:37	8:39	8:41	8:55
9:05	9:17	9:19	9:21	9:22	9:24	9:26	9:30	9:33	9:35	9:36	9:37	9:39	9:41	9:55
10:05	10:17	10:19	10:21	10:22	10:24	10:26	10:30	10:33	10:35	10:36	10:37	10:39	10:41	10:55
11:05	11:17	11:19	11:21	11:22	11:24	11:26	11:30	11:33	11:35	11:36	11:37	11:39	11:41	11:55
12:05	12:17	12:19	12:21	12:22	12:24	12:26	12:30	12:33	12:35	12:36	12:37	12:39	12:41	12:55
1:05	1:17	1:19	1:21	1:22	1:24	1:26	1:30	1:33	1:35	1:36	1:37	1:39	1:41	1:55
2:05	2:17	2:19	2:21	2:22	2:24	2:26	2:30	2:33	2:35	2:36	2:37	2:39	2:41	2:55
3:05	3:17	3:19	3:21	3:22	3:24	3:26	3:30	3:33	3:35	3:36	3:37	3:39	3:41	3:55
4:05	4:17	4:19	4:21	4:22	4:24	4:26	4:30	4:33	4:35	4:36	4:37	4:39	4:41	4:55
5:05	5:17	5:19	5:21	5:22	5:24	5:26	5:30	5:33	5:35	5:36	5:37	5:39	5:41	5:55
6:05	6:17	6:19	6:21	6:22	6:24	6:26	6:30	6:33	6:35	6:36	6:37	6:39	6:41	6:55
7:05	7:17	7:19	7:21	7:22	7:24	7:26	7:30	7:33	7:35	7:36	7:37	7:39	7:41	7:55
8:05	8:17	8:19	8:21	8:22	8:24	8:26	8:30	8:33	8:35	8:36	8:37	8:39	8:41	8:55

LAHAINA VILLAGER ROUTE #23

Wharf Cinema Center Luakini Street	505 Front Street	Lahaina Aquatics Center	Kualiaua Street / Kumukahi Street	Kelena Street / Pikanelo Street	Lahaina Gateway	Alaheka Road / Fleming Road	Lela'ili Parkway / Near Hooli Street	Lahaina Civic Center (back)	Lahaina Cannery Mall	Papalaua Street	Wharf Cinema Center Luakini Street
8:00	8:04	8:09	8:15	8:17	8:23	8:27	8:31	8:34	8:42	8:48	9:00
9:00	9:04	9:09	9:15	9:17	9:23	9:27	9:31	9:34	9:42	9:48	10:00
10:00	10:04	10:09	10:15	10:17	10:23	10:27	10:31	10:34	10:42	10:48	11:00
11:00	11:04	11:09	11:15	11:17	11:23	11:27	11:31	11:34	11:42	11:48	12:00
12:00	12:04	12:09	12:15	12:17	12:23	12:27	12:31	12:34	12:42	12:48	1:00
1:00	1:04	1:09	1:15	1:17	1:23	1:27	1:31	1:34	1:42	1:48	2:00
BREAK											
3:00	3:04	3:09	3:15	3:17	3:23	3:27	3:31	3:34	3:42	3:48	4:00
4:00	4:04	4:09	4:15	4:17	4:23	4:27	4:31	4:34	4:42	4:48	5:00
5:00	5:04	5:09	5:15	5:17	5:23	5:27	5:31	5:34	5:42	5:48	6:00
6:00	6:04	6:09	6:15	6:17	6:23	6:27	6:31	6:34	6:42	6:48	7:00
7:00	7:04	7:09	7:15	7:17	7:23	7:27	7:31	7:34	7:42	7:48	8:00
8:00	8:04	8:09	8:15	8:17	8:23	8:27	8:31	8:34	8:42	8:48	9:00
9:00	9:04	9:09	9:15	9:17	9:23	9:27	9:31	9:34	9:42	9:48	10:00
10:00	10:04	10:09	10:15	10:17	10:23	10:27	10:31	10:34	10:42	10:48	11:00

NAPILI ISLANDER ROUTE #30

Whalers Village	Honokowai Shop'g Ctr	Polynesian Shores	Kahana Manor	Napili Plaza	Napili Kai	Napili Shores	Napili Plaza	Kahana Sunset	Valley Isle Resort	Polynesian Shores	Across Honokowai Shopping Center	Whalers Village
6:00	6:10	6:15	6:17	6:24	6:30	6:33	6:37	6:40	6:43	6:45	6:50	7:00
7:00	7:10	7:15	7:17	7:24	7:30	7:33	7:37	7:40	7:43	7:45	7:50	8:00
8:00	8:10	8:15	8:17	8:24	8:30	8:33	8:37	8:40	8:43	8:45	8:50	9:00
9:00	9:10	9:15	9:17	9:24	9:30	9:33	9:37	9:40	9:43	9:45	9:50	10:00
10:00	10:10	10:15	10:17	10:24	10:30	10:33	10:37	10:40	10:43	10:45	10:50	11:00
11:00	11:10	11:15	11:17	11:24	11:30	11:33	11:37	11:40	11:43	11:45	11:50	12:00
12:00	12:10	12:15	12:17	12:24	12:30	12:33	12:37	12:40	12:43	12:45	12:50	1:00
1:00	1:10	1:15	1:17	1:24	1:30	1:33	1:37	1:40	1:43	1:45	1:50	2:00
2:00	2:10	2:15	2:17	2:24	2:30	2:33	2:37	2:40	2:43	2:45	2:50	3:00
3:00	3:10	3:15	3:17	3:24	3:30	3:33	3:37	3:40	3:43	3:45	3:50	4:00
4:00	4:10	4:15	4:17	4:24	4:30	4:33	4:37	4:40	4:43	4:45	4:50	5:00
5:00	5:10	5:15	5:17	5:24	5:30	5:33	5:37	5:40	5:43	5:45	5:50	6:00
6:00	6:10	6:15	6:17	6:24	6:30	6:33	6:37	6:40	6:43	6:45	6:50	7:00
7:00	7:10	7:15	7:17	7:24	7:30	7:33	7:37	7:40	7:43	7:45	7:50	8:00
8:00	8:10	8:15	8:17	8:24	8:30	8:33	8:37	8:40	8:43	8:45	8:50	9:00

KULA VILLAGER ROUTE #39

Pukalani Street near Comm. Ctr Entrance	Kulamalu - To Kula	Lower Kula Rd. / Waialea Pl.	Lower Kula Rd. / Lower Kimo Dr.	Kula Hardware	Kula Community Ctr. / Holy Ghost Church	Near Mothara Store / Kula Gym	Lower Kula Rd. / Naa'ae Rd.	Rice Park	Lower Kula Rd. / Naa'ae Rd.	Near Mothara Store / Kula Gym	Kula Community Ctr. / Holy Ghost Church	Kula Hardware	Lower Kula Rd. / Lower Kimo Dr.	Lower Kula Rd. / Waialea Pl.	Kulamalu - To Pukalani	Pukalani Street near Comm. Ctr Entrance
7:17	7:27	7:32	7:33	7:35	7:39	7:40	7:43	7:45	7:49	7:52	7:53	7:58	8:00	8:01	8:08	8:17
8:17	8:27	8:32	8:33	8:35	8:39	8:40	8:43	8:45	8:49	8:52	8:53	8:58	9:00	9:01	9:08	9:17
9:17	9:27	9:32	9:33	9:35	9:39	9:40	9:43	9:45	9:49	9:52	9:53	9:58	10:00	10:01	10:08	10:17
10:17	10:27	10:32	10:33	10:35	10:39	10:40	10:43	10:45	10:49	10:52	10:53	10:58	11:00	11:01	11:08	11:17
11:17	11:27	11:32	11:33	11:35	11:39	11:40	11:43	11:45	11:49	11:52	11:53	11:58	12:00	12:01	12:08	12:17
12:17	12:27	12:32	12:33	12:35	12:39	12:40	12:43	12:45	12:49	12:52	12:53	12:58	1:00	1:01	1:08	1:17
1:17	1:27	1:32	1:33	1:35	1:39	1:40	1:43	1:45	1:49	1:52	1:53	1:58	2:00	2:01	2:08	2:17
2:17	2:27	2:32	2:33	2:35	2:39	2:40	2:43	2:45	2:49	2:52	2:53	2:58	3:00	3:01	3:08	3:17
3:17	3:27	3:32	3:33	3:35	3:39	3:40	3:43	3:45	3:49	3:52	3:53	3:58	4:00	4:01	4:08	4:17
4:17	4:27	4:32	4:33	4:35	4:39	4:40	4:43	4:45	4:49	4:52	4:53	4:58	5:00	5:01	5:08	5:17
5:17	5:27	5:32	5:33	5:35	5:39	5:40	5:43	5:45	5:49	5:52	5:53	5:58	6:00	6:01	6:08	6:17
6:17	6:27	6:32	6:33	6:35	6:39	6:40	6:43	6:45	6:49	6:52	6:53	6:58	7:00	7:01	7:08	7:17
7:17	7:27	7:32	7:33	7:35	7:39	7:40	7:43	7:45	7:49	7:52	7:53	7:58	8:00	8:01	8:08	8:17
8:17	8:27	8:32	8:33	8:35	8:39	8:40	8:43	8:45	8:49	8:52	8:53	8:58	9:00	9:01	9:08	9:17

[All times in BOLD are PM]

**ALL ROUTES
\$2 PER BOARDING**

RULES

For your safety and the safety of others:

- Be at the bus stop at least 5 minutes prior to departure time. Wait on proper side of the road for the bus to arrive at the bus stop sign. Wait for the bus to make a complete stop before approaching the bus.
- Enter the bus with the exact fare or have your pass visible.
- Infants under 2 years old, traveling free must ride on the lap of an accompanying adult.
- Allow senior citizens the use of front seating.
- Be alert at all times for sudden or quick stops.
- When standing, please move to the rear of the bus and always hold on to standee handbars or seatbars.
- Do not change seats after the bus starts moving and fasten your seatbelts.
- One (1) Medium-sized suitcase, duffle bag, backpack, or carry-on bag allowed, no larger than 22"H x 14"W x 9"L and must fit and be placed under the passenger's seat or on the passenger's lap so that they do not protrude to another seat.
- All buses are equipped with a bicycle rack that can hold a maximum of two (2) bicycles. Only two-wheeled, non-motorized bicycles are permitted. Both tires must sit flat to the base of the rack. Bicycles with an oversized basket or other type of carrier that obstructs the view of the driver is not permitted. No gas or electric bicycles allowed.
- Grocery bags that a passenger can carry in their arms and be placed on their lap or under the seat are allowed. Bags filled with bottle and can recyclables are not allowed.
- Golf clubs or detachable fishing poles properly covered or in a container with no sharp edges are limited to three per person.
- Soft body boards without skegs and beach mats free of sand and debris are allowed.
- Metal-framed child carriers, collapsible baby strollers, band instruments, skateboards, beach chairs and small coolers are limited to one per person.
- Pets must be in an enclosed container or cage.
- Service animals are allowed on the bus.
- Shirt and footwear are required.

- Anyone who believes that he or she has been discriminated against on the basis of race, color, sex, age, religion, national origin, disability, low income, or limited English proficiency while using the Maui Bus or its paratransit services may file a Title VI complaint with MDOT.

Prohibited:

- Surfboards and sandboards.
- Food, beverages, smoking, e-cigarettes, loud music.
- Flammable, explosive or toxic materials.
- Weapons and dangerous instruments.
- Littering on the bus.

FARES

All routes cost \$2.00 per boarding. Infants under 2 years old, riding on the lap of an accompanying adult travel free. Daily and monthly passes are also available.

GENERAL BOARDING - All Routes	\$2.00
<i>Commuter and ADA Paratransit Service</i>	

DAILY PASS	\$4.00
<i>Fixed Routes and ADA Paratransit Service</i>	

MONTHLY PASS	
General Boarding - All Routes	\$45.00
<i>Commuter and ADA Paratransit Service</i>	

Student Pass (With Valid School ID)	\$30.00
<i>Fixed Routes and ADA Paratransit Service</i>	

Senior Pass (55 Years & Older)	\$25.00
<i>Fixed Routes Only</i>	

Senior ADA Paratransit Pass (55 Years & Older)	\$30.00
<i>Paratransit Service Only</i>	

Person with Disability Pass*	\$30.00
<i>Fixed Routes Only</i>	

**Applicants shall be required to register with Maui Economic Opportunity, Inc. (MEO) to qualify for this rate. Please contact MEO at (808) 249-2990 for application and information.*

Monthly Passes are valid for a calendar month and are available for purchase from the 25th of the previous month through the 10th of each month.

Monthly and daily passes are available from Maui Bus Drivers; at the County Business Resource Center – Maui Mall (weekdays 8 am–4:30 pm, excluding holidays); and at the Wharf Cinema Center Management Office (weekdays 9 am–4 pm, excluding holidays).

Note: Lost, stolen, destroyed or misplaced bus passes will not be replaced or refunded. Monthly and daily passes are non-transferable.




maui bus

All vehicles are ADA accessible and are equipped with two bicycle racks.



**County of Maui
Department of Transportation**

Operated By

Roberts Hawaii 

(808) 871-4838

























EFFECTIVE FEBRUARY, 2015

Appendix D

Analysis Reports Existing (2016)
Condition

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Existing (2016)
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	94	91	257	39	194	22	1040	112	201	1395	29
Future Volume (veh/h)	106	94	91	257	39	194	22	1040	112	201	1395	29
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	100	0	273	41	0	23	1106	0	214	1484	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	238	203	298	392	333	92	1557	697	255	1883	842
Arrive On Green	0.09	0.13	0.00	0.17	0.21	0.00	0.05	0.44	0.00	0.05	0.18	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	100	0	273	41	0	23	1106	0	214	1484	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.8	6.2	0.0	18.9	2.2	0.0	1.6	31.8	0.0	15.0	50.2	0.0
Cycle Q Clear(g_c), s	7.8	6.2	0.0	18.9	2.2	0.0	1.6	31.8	0.0	15.0	50.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	152	238	203	298	392	333	92	1557	697	255	1883	842
V/C Ratio(X)	0.74	0.42	0.00	0.92	0.10	0.00	0.25	0.71	0.00	0.84	0.79	0.00
Avail Cap(c_a), veh/h	213	358	304	298	447	380	156	1557	697	270	1883	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.79	0.79	0.00
Uniform Delay (d), s/veh	55.8	50.2	0.0	51.1	39.8	0.0	56.9	28.5	0.0	58.1	44.8	0.0
Incr Delay (d2), s/veh	8.5	1.2	0.0	31.3	0.1	0.0	0.5	2.8	0.0	14.9	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.3	0.0	11.8	1.2	0.0	0.8	16.1	0.0	8.4	25.3	0.0
LnGrp Delay(d),s/veh	64.3	51.4	0.0	82.4	40.0	0.0	57.4	31.3	0.0	73.0	47.5	0.0
LnGrp LOS	E	D		F	D		E	C		E	D	
Approach Vol, veh/h		213			314			1129			1698	
Approach Delay, s/veh		58.2			76.9			31.8			50.7	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	59.0	13.7	30.3	10.5	70.5	24.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	18.0	45.0	14.0	29.0	10.0	53.0	20.0	23.0				
Max Q Clear Time (g_c+I1), s	17.0	33.8	9.8	4.2	3.6	52.2	20.9	8.2				
Green Ext Time (p_c), s	0.0	10.7	0.1	0.5	0.0	0.8	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			47.3									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Existing (2016)
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	84	21	88	123	14	114	26	1232	45	24	1366	20
Future Volume (veh/h)	84	21	88	123	14	114	26	1232	45	24	1366	20
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	90	23	0	132	15	0	28	1325	0	26	1469	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	43	201	224	19	201	58	2639	1180	56	2635	1179
Arrive On Green	0.13	0.13	0.00	0.13	0.13	0.00	0.07	1.00	0.00	0.06	1.00	0.00
Sat Flow, veh/h	1310	337	1583	1337	152	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	0	0	147	0	0	28	1325	0	26	1469	0
Grp Sat Flow(s),veh/h/ln	1647	0	1583	1489	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	4.0	0.0	0.0	1.9	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	0.0	11.7	0.0	0.0	1.9	0.0	0.0	1.8	0.0	0.0
Prop In Lane	0.80		1.00	0.90		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	0	201	243	0	201	58	2639	1180	56	2635	1179
V/C Ratio(X)	0.43	0.00	0.00	0.60	0.00	0.00	0.48	0.50	0.00	0.46	0.56	0.00
Avail Cap(c_a), veh/h	380	0	329	359	0	329	156	2639	1180	156	2635	1179
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.70	0.70	0.00	0.84	0.84	0.00
Uniform Delay (d), s/veh	51.0	0.0	0.0	52.7	0.0	0.0	57.4	0.0	0.0	57.5	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	3.4	0.0	0.0	1.6	0.5	0.0	1.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	5.1	0.0	0.0	1.0	0.2	0.0	0.9	0.3	0.0
LnGrp Delay(d),s/veh	52.7	0.0	0.0	56.1	0.0	0.0	58.9	0.5	0.0	59.3	0.7	0.0
LnGrp LOS	D			E			E	A		E	A	
Approach Vol, veh/h		113			147			1353			1495	
Approach Delay, s/veh		52.7			56.1			1.7			1.7	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	97.2		19.8	8.1	97.1		19.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	75.0	75.0		25.0	10.0	75.0		25.0				
Max Q Clear Time (g_c+I), s	10.0	2.0		13.7	3.9	2.0		9.7				
Green Ext Time (p_c), s	0.0	61.2		1.1	0.0	61.2		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay				6.1								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Existing (2016)
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	194	3	373	8	1	21	434	1009	5	2	1033	135
Future Volume (veh/h)	194	3	373	8	1	21	434	1009	5	2	1033	135
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	211	0	0	9	1	23	467	1085	0	2	1111	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	0	258	77	3	66	545	2595	1135	4	2042	914
Arrive On Green	0.09	0.00	0.00	0.04	0.04	0.03	0.32	1.00	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3548	0	3167	1774	66	1527	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	211	0	0	9	0	24	467	1085	0	2	1111	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1593	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.2	0.0	0.0	0.6	0.0	1.8	15.9	0.0	0.0	0.1	24.2	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	0.6	0.0	1.8	15.9	0.0	0.0	0.1	24.2	0.0
Prop In Lane	1.00		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	332	0	258	77	0	69	545	2595	1135	4	2042	914
V/C Ratio(X)	0.64	0.00	0.00	0.12	0.00	0.35	0.86	0.42	0.00	0.53	0.54	0.00
Avail Cap(c_a), veh/h	539	0	443	99	0	89	743	2595	1135	57	2042	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.00	1.00	0.00	1.00	0.85	0.85	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.6	0.0	0.0	57.5	0.0	59.0	41.4	0.0	0.0	62.3	16.3	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.7	0.0	3.0	6.4	0.4	0.0	35.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	0.3	0.0	0.9	7.9	0.2	0.0	0.1	12.0	0.0
LnGrp Delay(d),s/veh	56.6	0.0	0.0	58.2	0.0	62.0	47.7	0.4	0.0	98.2	17.3	0.0
LnGrp LOS	E			E			E	D	A		F	B
Approach Vol, veh/h		211			33			1552			1113	
Approach Delay, s/veh		56.6			61.0			14.7			17.5	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	95.6		9.4	23.8	76.1		15.7				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	77.0			5.0	26.5	54.0		17.0				
Max Q Clear Time (g_c+I), s	2.0			3.8	17.9	26.2		9.2				
Green Ext Time (p_c), s	0.0	39.6		0.0	1.4	21.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				19.3								
HCM 2010 LOS				B								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Existing (2016)
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	344	212	93	476	414	180		
Future Volume (veh/h)	344	212	93	476	414	180		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	358	0	97	496	431	188		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1253	1065	124	2740	557	237		
Arrive On Green	0.67	0.00	0.14	1.00	0.16	0.15		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	358	0	97	496	431	188		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	9.7	0.0	6.6	0.0	15.0	14.3		
Cycle Q Clear(g_c), s	9.7	0.0	6.6	0.0	15.0	14.3		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1253	1065	124	2740	557	237		
V/C Ratio(X)	0.29	0.00	0.78	0.18	0.77	0.79		
Avail Cap(c_a), veh/h	1253	1065	298	2740	964	424		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.79	0.79	1.00	1.00		
Uniform Delay (d), s/veh	8.3	0.0	52.9	0.0	50.2	51.3		
Incr Delay (d2), s/veh	0.6	0.0	3.2	0.1	0.9	2.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.2	0.0	3.3	0.0	7.2	6.4		
LnGrp Delay(d),s/veh	8.9	0.0	56.1	0.1	51.1	53.6		
LnGrp LOS	A		E	A	D	D		
Approach Vol, veh/h	358			593	619			
Approach Delay, s/veh	8.9			9.3	51.8			
Approach LOS	A			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.7	88.1				100.8		24.2
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	20.0	55.5				80.5		33.5
Max Q Clear Time (g_c+I), s	11.7	11.7				2.0		17.0
Green Ext Time (p_c), s	0.1	10.0				10.7		1.7
Intersection Summary								
HCM 2010 Ctrl Delay			26.0					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Existing (2016)
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	238	192	151	1029	1566	379		
Future Volume (veh/h)	238	192	151	1029	1566	379		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	253	0	161	1095	1666	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	283	253	189	2748	2258	1010		
Arrive On Green	0.16	0.00	0.11	0.78	0.64	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	253	0	161	1095	1666	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	17.5	0.0	11.1	12.5	40.2	0.0		
Cycle Q Clear(g_c), s	17.5	0.0	11.1	12.5	40.2	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	283	253	189	2748	2258	1010		
V/C Ratio(X)	0.89	0.00	0.85	0.40	0.74	0.00		
Avail Cap(c_a), veh/h	355	317	255	2748	2258	1010		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	51.5	0.0	54.9	4.5	15.5	0.0		
Incr Delay (d2), s/veh	20.6	0.0	18.2	0.4	2.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.2	0.0	6.4	6.2	20.1	0.0		
LnGrp Delay(d),s/veh	72.0	0.0	73.1	5.0	17.7	0.0		
LnGrp LOS	E		E	A	B			
Approach Vol, veh/h	253			1256	1666			
Approach Delay, s/veh	72.0			13.7	17.7			
Approach LOS	E			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		101.1		23.9	17.3	83.7		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		92.0		25.0	18.0	70.0		
Max Q Clear Time (g_c+l1), s		14.5		19.5	13.1	42.2		
Green Ext Time (p_c), s		30.8		0.5	0.2	18.5		
Intersection Summary								
HCM 2010 Ctrl Delay			20.4					
HCM 2010 LOS			C					

Intersection

Int Delay, s/veh 8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	23	205	45	1255	1738	12
Future Vol, veh/h	23	205	45	1255	1738	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	250	0	400	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	216	47	1321	1829	13

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2584	915	1829 0
Stage 1	1829	-	- -
Stage 2	755	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	~ 21	275	330 -
Stage 1	113	-	- -
Stage 2	425	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	~ 18	275	330 -
Mov Cap-2 Maneuver	~ 18	-	- -
Stage 1	113	-	- -
Stage 2	364	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	112.2	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	330	-	18	275	-	-
HCM Lane V/C Ratio	0.144	-	1.345	0.785	-	-
HCM Control Delay (s)	17.7	-	\$ 639.1	53.1	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.5	-	3.4	6	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	60	22	459	53	10	337
Future Vol, veh/h	60	22	459	53	10	337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	24	499	58	11	366

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	916	528	0	0	557	0
Stage 1	528	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	302	550	-	-	1014	-
Stage 1	592	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	298	550	-	-	1014	-
Mov Cap-2 Maneuver	298	-	-	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	676	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	298	550	1014	-
HCM Lane V/C Ratio	-	-	0.219	0.043	0.011	-
HCM Control Delay (s)	-	-	20.4	11.8	8.6	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	0	-

Intersection

Int Delay, s/veh 34.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	56	134	42	1243	1879	54
Future Vol, veh/h	56	134	42	1243	1879	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	0	0	475	-	-	375
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	141	44	1308	1978	57

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2721	989	1978 0
Stage 1	1978	-	- -
Stage 2	743	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	~ 17	246	289 -
Stage 1	93	-	- -
Stage 2	431	-	- -
Platoon blocked, %			-
Mov Cap-1 Maneuver	~ 14	246	289 -
Mov Cap-2 Maneuver	~ 14	-	- -
Stage 1	93	-	- -
Stage 2	365	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	\$ 612.7	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	289	-	14	246	-
HCM Lane V/C Ratio	0.153	-	4.211	0.573	-
HCM Control Delay (s)	19.7	-	\$ 1989	37.6	-
HCM Lane LOS	C	-	F	E	-
HCM 95th %tile Q(veh)	0.5	-	8.3	3.2	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection													
Int Delay, s/veh	7.3												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	23	38	2	7	10	40	2	3	24	166	3	10
Future Vol, veh/h	23	38	2	7	10	40	2	3	24	166	3	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	40	2	7	11	42	2	3	25	175	3	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	53	0	0	42	0	0	142	156	41	150	137	32
Stage 1	-	-	-	-	-	-	89	89	-	46	46	-
Stage 2	-	-	-	-	-	-	53	67	-	104	91	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1553	-	-	1567	-	-	828	736	1030	818	754	1042
Stage 1	-	-	-	-	-	-	918	821	-	968	857	-
Stage 2	-	-	-	-	-	-	960	839	-	902	820	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1553	-	-	1567	-	-	805	721	1030	783	739	1042
Mov Cap-2 Maneuver	-	-	-	-	-	-	805	721	-	783	739	-
Stage 1	-	-	-	-	-	-	904	808	-	953	853	-
Stage 2	-	-	-	-	-	-	943	835	-	863	807	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.9	8.8	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	805	983	1553	-	-	1567	-	-	783	952
HCM Lane V/C Ratio	0.003	0.029	0.016	-	-	0.005	-	-	0.223	0.014
HCM Control Delay (s)	9.5	8.8	7.4	-	-	7.3	-	-	10.9	8.8
HCM Lane LOS	A	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0	0.1	0	-	-	0	-	-	0.9	0

HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Existing (2016)
 AM Peak Hour

Intersection												
Int Delay, s/veh	4.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	23	40	6	3	25	2	14	0	3	5	0	41
Future Vol, veh/h	23	40	6	3	25	2	14	0	3	5	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	44	7	3	28	2	16	0	3	6	0	46

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	30	0	0	51	0	0	157	136	48	137	138	29
Stage 1	-	-	-	-	-	-	99	99	-	36	36	-
Stage 2	-	-	-	-	-	-	58	37	-	101	102	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1583	-	-	1555	-	-	809	755	1021	834	753	1046
Stage 1	-	-	-	-	-	-	907	813	-	980	865	-
Stage 2	-	-	-	-	-	-	954	864	-	905	811	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1583	-	-	1555	-	-	763	741	1021	820	739	1046
Mov Cap-2 Maneuver	-	-	-	-	-	-	763	741	-	820	739	-
Stage 1	-	-	-	-	-	-	892	800	-	964	863	-
Stage 2	-	-	-	-	-	-	911	862	-	887	798	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.7	9.6	8.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	799	1583	-	-	1555	-	-	1016
HCM Lane V/C Ratio	0.024	0.016	-	-	0.002	-	-	0.05
HCM Control Delay (s)	9.6	7.3	-	-	7.3	-	-	8.7
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Existing (2016)
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	61	66	195	56	198	49	1502	151	158	1480	85
Future Volume (veh/h)	75	61	66	195	56	198	49	1502	151	158	1480	85
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	77	63	0	201	58	0	51	1548	0	163	1526	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	199	169	233	331	281	116	1959	876	192	2111	944
Arrive On Green	0.06	0.11	0.00	0.13	0.18	0.00	0.07	0.55	0.00	0.22	1.00	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	77	63	0	201	58	0	51	1548	0	163	1526	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.4	4.7	0.0	16.6	4.0	0.0	4.1	52.1	0.0	13.2	0.0	0.0
Cycle Q Clear(g_c), s	6.4	4.7	0.0	16.6	4.0	0.0	4.1	52.1	0.0	13.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	199	169	233	331	281	116	1959	876	192	2111	944
V/C Ratio(X)	0.71	0.32	0.00	0.86	0.18	0.00	0.44	0.79	0.00	0.85	0.72	0.00
Avail Cap(c_a), veh/h	154	298	253	248	397	338	130	1959	876	201	2111	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.78	0.78	0.00
Uniform Delay (d), s/veh	69.2	62.0	0.0	63.8	52.4	0.0	67.5	26.6	0.0	57.6	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.9	0.0	24.1	0.2	0.0	1.0	3.3	0.0	20.5	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.5	0.0	9.7	2.1	0.0	2.1	26.3	0.0	7.5	0.5	0.0
LnGrp Delay(d),s/veh	77.7	62.9	0.0	87.9	52.6	0.0	68.4	29.9	0.0	78.1	1.7	0.0
LnGrp LOS	E	E		F	D		E	C		E	A	
Approach Vol, veh/h		140			259			1599			1689	
Approach Delay, s/veh		71.0			80.0			31.1			9.1	
Approach LOS		E			F			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.2	87.0	12.1	30.6	13.8	93.5	22.7	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	16.0	72.0	12.0	31.0	10.0	78.0	20.0	23.0				
Max Q Clear Time (g_c+I1), s	15.2	54.1	8.4	6.0	6.1	2.0	18.6	6.7				
Green Ext Time (p_c), s	0.0	17.4	0.1	0.4	0.0	68.2	0.1	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			26.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Existing (2016)
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕↕	↗	↖	↕↕	↗
Traffic Volume (veh/h)	31	30	42	57	11	51	39	1547	94	78	1609	65
Future Volume (veh/h)	31	30	42	57	11	51	39	1547	94	78	1609	65
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	32	31	0	59	11	0	40	1595	0	80	1659	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	65	109	130	16	109	63	2818	1261	109	2911	1302
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.07	1.00	0.00	0.12	1.00	0.00
Sat Flow, veh/h	764	948	1583	1251	233	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	63	0	0	70	0	0	40	1595	0	80	1659	0
Grp Sat Flow(s),veh/h/ln	712	0	1583	1484	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	3.3	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	6.8	0.0	0.0	3.3	0.0	0.0	6.5	0.0	0.0
Prop In Lane	0.51		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	154	0	109	146	0	109	63	2818	1261	109	2911	1302
V/C Ratio(X)	0.41	0.00	0.00	0.48	0.00	0.00	0.64	0.57	0.00	0.73	0.57	0.00
Avail Cap(c_a), veh/h	310	0	264	286	0	264	130	2818	1261	177	2911	1302
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.57	0.57	0.00	0.73	0.73	0.00
Uniform Delay (d), s/veh	67.4	0.0	0.0	68.2	0.0	0.0	68.8	0.0	0.0	64.5	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	3.4	0.0	0.0	2.3	0.5	0.0	2.6	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	3.0	0.0	0.0	1.6	0.2	0.0	3.3	0.2	0.0
LnGrp Delay(d),s/veh	69.9	0.0	0.0	71.6	0.0	0.0	71.1	0.5	0.0	67.1	0.6	0.0
LnGrp LOS	E			E			E	A		E	A	
Approach Vol, veh/h		63			70			1635			1739	
Approach Delay, s/veh		69.9			71.6			2.2			3.7	
Approach LOS		E			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.3	123.4		13.3	9.3	127.4		13.3				
Change Period (Y+Rc), s	5.0	5.0		4.0	5.0	5.0		4.0				
Max Green Setting (Gmax), s	10.0	98.0		24.0	10.0	102.0		24.0				
Max Q Clear Time (g_c+I), s	10.0	2.0		8.8	5.3	2.0		7.1				
Green Ext Time (p_c), s	0.0	86.8		0.6	0.0	90.1		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			5.5									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Existing (2016)
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	192	2	391	27	17	41	407	1244	18	5	1335	234
Future Volume (veh/h)	192	2	391	27	17	41	407	1244	18	5	1335	234
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	203	0	0	28	18	43	428	1309	0	5	1405	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	0	239	95	26	62	491	2653	1166	9	2165	969
Arrive On Green	0.09	0.00	0.00	0.05	0.05	0.04	0.29	1.00	0.00	0.01	0.61	0.00
Sat Flow, veh/h	3548	0	3167	1774	489	1168	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	203	0	0	28	0	61	428	1309	0	5	1405	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1657	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.3	0.0	0.0	2.3	0.0	5.4	17.7	0.0	0.0	0.4	38.3	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0	2.3	0.0	5.4	17.7	0.0	0.0	0.4	38.3	0.0
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	239	95	0	88	491	2653	1166	9	2165	969
V/C Ratio(X)	0.67	0.00	0.00	0.30	0.00	0.69	0.87	0.49	0.00	0.56	0.65	0.00
Avail Cap(c_a), veh/h	473	0	391	95	0	88	642	2653	1166	47	2165	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.00	1.00	0.00	1.00	0.78	0.78	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.5	0.0	0.0	68.3	0.0	70.5	52.3	0.0	0.0	74.5	18.7	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.7	0.0	20.4	8.1	0.5	0.0	19.0	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	1.2	0.0	3.0	9.0	0.2	0.0	0.3	19.2	0.0
LnGrp Delay(d),s/veh	69.0	0.0	0.0	70.0	0.0	90.9	60.3	0.5	0.0	93.5	20.3	0.0
LnGrp LOS	E			E		F	E	A		F	C	
Approach Vol, veh/h		203			89			1737			1410	
Approach Delay, s/veh		69.0			84.3			15.3			20.5	
Approach LOS		E			F			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	116.4		12.0	25.4	95.8		16.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	100.0			6.0	27.5	76.0		18.0				
Max Q Clear Time (g_c+I), s	2.0			7.4	19.7	40.3		10.3				
Green Ext Time (p_c), s	0.0	65.5		0.0	1.2	30.3		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				22.4								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Existing (2016)
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↖	↗		
Traffic Volume (veh/h)	421	428	190	445	282	172		
Future Volume (veh/h)	421	428	190	445	282	172		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	434	0	196	459	291	177		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1225	1041	218	2857	480	205		
Arrive On Green	0.66	0.00	0.25	1.00	0.14	0.13		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	434	0	196	459	291	177		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	15.6	0.0	16.0	0.0	11.9	16.4		
Cycle Q Clear(g_c), s	15.6	0.0	16.0	0.0	11.9	16.4		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1225	1041	218	2857	480	205		
V/C Ratio(X)	0.35	0.00	0.90	0.16	0.61	0.86		
Avail Cap(c_a), veh/h	1225	1041	449	2857	665	290		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.81	0.81	1.00	1.00		
Uniform Delay (d), s/veh	11.5	0.0	55.7	0.0	60.7	64.0		
Incr Delay (d2), s/veh	0.8	0.0	4.3	0.1	0.5	12.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	18.2	0.0	8.1	0.0	5.7	7.9		
LnGrp Delay(d),s/veh	12.3	0.0	60.0	0.1	61.1	76.9		
LnGrp LOS	B		E	A	E	E		
Approach Vol, veh/h	434			655	468			
Approach Delay, s/veh	12.3			18.0	67.1			
Approach LOS	B			B	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	32.4	102.6				125.1		24.9
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	30.0	69.5				111.5		27.5
Max Q Clear Time (g_c+I), s	17.6	17.6				2.0		18.4
Green Ext Time (p_c), s	0.4	11.0				11.5		1.0
Intersection Summary								
HCM 2010 Ctrl Delay			31.2					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Existing (2016)
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	262	302	223	1592	1403	343		
Future Volume (veh/h)	262	302	223	1592	1403	343		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	265	0	225	1608	1417	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	293	261	251	2766	2172	972		
Arrive On Green	0.17	0.00	0.14	0.78	0.61	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	265	0	225	1608	1417	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	22.0	0.0	18.7	27.3	38.7	0.0		
Cycle Q Clear(g_c), s	22.0	0.0	18.7	27.3	38.7	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	293	261	251	2766	2172	972		
V/C Ratio(X)	0.91	0.00	0.90	0.58	0.65	0.00		
Avail Cap(c_a), veh/h	402	359	343	2766	2172	972		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	61.5	0.0	63.3	6.6	18.7	0.0		
Incr Delay (d2), s/veh	18.9	0.0	20.1	0.9	1.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	12.4	0.0	10.6	13.5	19.4	0.0		
LnGrp Delay(d),s/veh	80.4	0.0	83.5	7.5	20.2	0.0		
LnGrp LOS	F		F	A	C			
Approach Vol, veh/h	265			1833	1417			
Approach Delay, s/veh	80.4			16.8	20.2			
Approach LOS	F			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		121.2		28.8	25.2	96.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		108.0		34.0	29.0	75.0		
Max Q Clear Time (g_c+l1), s		29.3		24.0	20.7	40.7		
Green Ext Time (p_c), s		37.3		0.8	0.5	23.6		
Intersection Summary								
HCM 2010 Ctrl Delay			23.0					
HCM 2010 LOS			C					

Intersection

Int Delay, s/veh 5.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	17	106	81	1720	1700	41
Future Vol, veh/h	17	106	81	1720	1700	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	250	0	400	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	110	84	1792	1771	43

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2836	885	1771 0
Stage 1	1771	-	- -
Stage 2	1065	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	~ 14	288	348 -
Stage 1	122	-	- -
Stage 2	292	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	~ 11	288	348 -
Mov Cap-2 Maneuver	~ 11	-	- -
Stage 1	122	-	- -
Stage 2	222	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	156.4	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	348	-	11	288	-	-
HCM Lane V/C Ratio	0.242	-	1.61	0.383	-	-
HCM Control Delay (s)	18.6	-\$ 975.4	25.1	-	-	-
HCM Lane LOS	C	-	F	D	-	-
HCM 95th %tile Q(veh)	0.9	-	3	1.7	-	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	49	22	544	127	30	573
Future Vol, veh/h	49	22	544	127	30	573
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	22	549	128	30	579

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	1253	614	0	0	678	0
Stage 1	614	-	-	-	-	-
Stage 2	639	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	190	492	-	-	914	-
Stage 1	540	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	181	492	-	-	914	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	501	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	181	492	914	-
HCM Lane V/C Ratio	-	-	0.273	0.045	0.033	-
HCM Control Delay (s)	-	-	32.2	12.7	9.1	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	0.1	-

Intersection

Int Delay, s/veh 12

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	32	102	54	1765	1729	65
Future Vol, veh/h	32	102	54	1765	1729	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	0	0	475	-	-	375
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	104	55	1801	1764	66

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2775	882	1764 0
Stage 1	1764	-	- -
Stage 2	1011	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	~ 15	289	350 -
Stage 1	123	-	- -
Stage 2	312	-	- -
Platoon blocked, %			-
Mov Cap-1 Maneuver	~ 13	289	350 -
Mov Cap-2 Maneuver	~ 13	-	- -
Stage 1	123	-	- -
Stage 2	263	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	\$ 323.4	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	350	-	13	289	-
HCM Lane V/C Ratio	0.157	-	2.512	0.36	-
HCM Control Delay (s)	17.2	\$	1276.8	24.3	-
HCM Lane LOS	C	-	F	C	-
HCM 95th %tile Q(veh)	0.6	-	4.9	1.6	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection													
Int Delay, s/veh	4.4												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	43	33	1	18	44	115	0	3	9	75	2	13
Future Vol, veh/h	43	33	1	18	44	115	0	3	9	75	2	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	37	1	20	49	128	0	3	10	83	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	38	0	0	294	350	37	292	286	113
Stage 1	-	-	-	-	-	-	133	133	-	153	153	-
Stage 2	-	-	-	-	-	-	161	217	-	139	133	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1399	-	-	1572	-	-	658	574	1035	660	623	940
Stage 1	-	-	-	-	-	-	870	786	-	849	771	-
Stage 2	-	-	-	-	-	-	841	723	-	864	786	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1399	-	-	1572	-	-	623	547	1035	627	594	940
Mov Cap-2 Maneuver	-	-	-	-	-	-	623	547	-	627	594	-
Stage 1	-	-	-	-	-	-	840	759	-	820	761	-
Stage 2	-	-	-	-	-	-	815	714	-	823	759	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0.7	9.3	11.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	846	1399	-	-	1572	-	-	627	872
HCM Lane V/C Ratio	-	0.016	0.034	-	-	0.013	-	-	0.133	0.019
HCM Control Delay (s)	0	9.3	7.7	-	-	7.3	-	-	11.6	9.2
HCM Lane LOS	A	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	-	0	0.1	-	-	0	-	-	0.5	0.1

HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Existing (2016)
 PM Peak Hour

Intersection												
Int Delay, s/veh	3.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	64	73	14	4	49	4	5	0	1	4	0	26
Future Vol, veh/h	64	73	14	4	49	4	5	0	1	4	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	81	16	4	54	4	6	0	1	4	0	29

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	97	0	0	311	299	89	298	305	57
Stage 1	-	-	-	-	-	-	231	231	-	66	66	-
Stage 2	-	-	-	-	-	-	80	68	-	232	239	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1545	-	-	1496	-	-	642	613	969	654	608	1009
Stage 1	-	-	-	-	-	-	772	713	-	945	840	-
Stage 2	-	-	-	-	-	-	929	838	-	771	708	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1545	-	-	1496	-	-	601	583	969	629	579	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	601	583	-	629	579	-
Stage 1	-	-	-	-	-	-	737	680	-	902	838	-
Stage 2	-	-	-	-	-	-	900	836	-	735	675	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0.5	10.7	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	642	1545	-	-	1496	-	-	934
HCM Lane V/C Ratio	0.01	0.046	-	-	0.003	-	-	0.036
HCM Control Delay (s)	10.7	7.4	-	-	7.4	-	-	9
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Existing (2016)
 Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	57	50	100	40	146	46	1144	113	96	1124	60
Future Volume (veh/h)	66	57	50	100	40	146	46	1144	113	96	1124	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	59	0	103	41	0	47	1179	0	99	1159	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	299	254	151	348	296	161	1515	678	266	1725	772
Arrive On Green	0.06	0.16	0.00	0.09	0.19	0.00	0.09	0.43	0.00	0.15	0.49	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	68	59	0	103	41	0	47	1179	0	99	1159	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.2	2.3	0.0	4.8	1.6	0.0	2.1	24.3	0.0	4.3	21.2	0.0
Cycle Q Clear(g_c), s	3.2	2.3	0.0	4.8	1.6	0.0	2.1	24.3	0.0	4.3	21.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	104	299	254	151	348	296	161	1515	678	266	1725	772
V/C Ratio(X)	0.65	0.20	0.00	0.68	0.12	0.00	0.29	0.78	0.00	0.37	0.67	0.00
Avail Cap(c_a), veh/h	104	416	354	209	526	447	230	1515	678	292	1725	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.86	0.86	0.00
Uniform Delay (d), s/veh	39.1	30.9	0.0	37.8	28.7	0.0	36.1	20.9	0.0	32.5	16.6	0.0
Incr Delay (d2), s/veh	13.5	0.3	0.0	5.3	0.1	0.0	0.4	4.0	0.0	0.3	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.2	0.0	2.6	0.8	0.0	1.0	12.6	0.0	2.1	10.7	0.0
LnGrp Delay(d),s/veh	52.6	31.3	0.0	43.0	28.9	0.0	36.5	24.9	0.0	32.8	18.4	0.0
LnGrp LOS	D	C		D	C		D	C		C	B	
Approach Vol, veh/h		127			144			1226			1258	
Approach Delay, s/veh		42.7			39.0			25.3			19.6	
Approach LOS		D			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	40.4	10.2	17.6	11.7	45.4	8.0	19.9				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	13.0	26.0	9.0	18.0	10.0	29.0	4.0	23.0				
Max Q Clear Time (g_c+l1), s	6.3	26.3	6.8	4.3	4.1	23.2	5.2	3.6				
Green Ext Time (p_c), s	0.1	0.0	0.1	0.2	0.0	5.5	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Existing (2016)
 Saturday Peak Ho



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	33	27	61	61	17	47	47	1242	47	41	1177	28
Future Volume (veh/h)	33	27	61	61	17	47	47	1242	47	41	1177	28
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	34	28	0	62	17	0	48	1267	0	42	1201	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	83	148	214	32	148	106	2356	1054	100	2342	1048
Arrive On Green	0.09	0.09	0.00	0.09	0.09	0.00	0.06	0.67	0.00	0.06	0.66	0.00
Sat Flow, veh/h	805	886	1583	1234	338	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	62	0	0	79	0	0	48	1267	0	42	1201	0
Grp Sat Flow(s),veh/h/ln	691	0	1583	1572	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	1.7	12.1	0.0	1.5	11.3	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	2.9	0.0	0.0	1.7	12.1	0.0	1.5	11.3	0.0
Prop In Lane	0.55		1.00	0.78		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	0	148	246	0	148	106	2356	1054	100	2342	1048
V/C Ratio(X)	0.25	0.00	0.00	0.32	0.00	0.00	0.45	0.54	0.00	0.42	0.51	0.00
Avail Cap(c_a), veh/h	653	0	560	626	0	560	164	2356	1054	164	2342	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.69	0.69	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	27.6	0.0	0.0	28.0	0.0	0.0	29.5	5.7	0.0	29.6	5.6	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	0.0	0.0	0.8	0.6	0.0	0.9	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.4	0.0	0.0	0.8	6.0	0.0	0.7	5.6	0.0
LnGrp Delay(d),s/veh	28.4	0.0	0.0	29.0	0.0	0.0	30.3	6.3	0.0	30.6	6.3	0.0
LnGrp LOS	C			C			C	A		C	A	
Approach Vol, veh/h		62			79			1315			1243	
Approach Delay, s/veh		28.4			29.0			7.2			7.2	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	47.3		10.1	7.9	47.0		10.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	23.0			22.0	5.0	23.0		22.0				
Max Q Clear Time (g_c+I), s	14.1			4.9	3.7	13.3		4.1				
Green Ext Time (p_c), s	0.0	8.4		0.6	0.0	9.2		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Existing (2016)
 Saturday Peak Ho



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	214	0	263	3	0	1	307	1031	1	3	974	198
Future Volume (veh/h)	214	0	263	3	0	1	307	1031	1	3	974	198
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	223	0	0	3	0	1	320	1074	0	3	1015	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	381	0	285	51	0	46	451	2379	1027	6	1948	871
Arrive On Green	0.11	0.00	0.00	0.03	0.00	0.01	0.13	0.67	0.00	0.00	0.55	0.00
Sat Flow, veh/h	3548	0	3167	1774	0	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	223	0	0	3	0	1	320	1074	0	3	1015	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	0.0	0.0	0.1	0.0	0.1	7.6	12.1	0.0	0.1	15.4	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	0.1	0.0	0.1	7.6	12.1	0.0	0.1	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	381	0	285	51	0	46	451	2379	1027	6	1948	871
V/C Ratio(X)	0.58	0.00	0.00	0.06	0.00	0.02	0.71	0.45	0.00	0.53	0.52	0.00
Avail Cap(c_a), veh/h	417	0	317	146	0	130	911	2379	1027	83	1948	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.00	1.00	0.00	1.00	0.84	0.84	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	40.2	0.0	41.1	35.4	6.6	0.0	42.3	12.1	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.5	0.0	0.2	1.7	0.5	0.0	25.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	0.1	0.0	0.0	3.7	6.0	0.0	0.1	7.7	0.0
LnGrp Delay(d),s/veh	37.8	0.0	0.0	40.6	0.0	41.3	37.1	7.1	0.0	67.4	13.1	0.0
LnGrp LOS	D			D			D	D	A		E	B
Approach Vol, veh/h		223			4			1394			1018	
Approach Delay, s/veh		37.8			40.8			14.0			13.2	
Approach LOS		D			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	61.1		6.5	14.6	50.8		13.1				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	46.0			5.0	22.0	28.0		8.0				
Max Q Clear Time (g_c+I), s	14.1			2.1	9.6	17.4		7.1				
Green Ext Time (p_c), s	0.0	22.2		0.0	1.1	9.1		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			15.7									
HCM 2010 LOS			B									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Existing (2016)
 Saturday Peak Ho



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	332	318	169	334	278	162		
Future Volume (veh/h)	332	318	169	334	278	162		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	346	0	176	348	290	169		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	679	577	255	2139	702	266		
Arrive On Green	0.36	0.00	0.14	0.60	0.20	0.17		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	346	0	176	348	290	169		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	6.0	0.0	3.9	1.8	3.1	4.1		
Cycle Q Clear(g_c), s	6.0	0.0	3.9	1.8	3.1	4.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	679	577	255	2139	702	266		
V/C Ratio(X)	0.51	0.00	0.69	0.16	0.41	0.64		
Avail Cap(c_a), veh/h	1184	1006	340	3268	702	266		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	10.3	0.0	17.0	3.6	14.4	16.2		
Incr Delay (d2), s/veh	1.3	0.0	1.7	0.1	0.1	3.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.3	0.0	2.0	0.9	1.5	2.1		
LnGrp Delay(d),s/veh	11.6	0.0	18.7	3.7	14.6	20.0		
LnGrp LOS	B		B	A	B	B		
Approach Vol, veh/h	346			524	459			
Approach Delay, s/veh	11.6			8.7	16.6			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.0	19.2				29.2		12.5
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	25.0					37.0		7.0
Max Q Clear Time (g_c+I), s	8.0					3.8		6.1
Green Ext Time (p_c), s	0.1	5.6				7.3		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			12.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Existing (2016)
 Saturday Peak Ho



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	253	238	195	1067	1031	340		
Future Volume (veh/h)	253	238	195	1067	1031	340		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	258	0	199	1089	1052	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	317	283	246	2434	1708	764		
Arrive On Green	0.18	0.00	0.14	0.69	0.48	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	258	0	199	1089	1052	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	8.4	0.0	6.5	8.3	13.1	0.0		
Cycle Q Clear(g_c), s	8.4	0.0	6.5	8.3	13.1	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	317	283	246	2434	1708	764		
V/C Ratio(X)	0.81	0.00	0.81	0.45	0.62	0.00		
Avail Cap(c_a), veh/h	473	422	296	2434	1708	764		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	23.7	0.0	25.1	4.2	11.4	0.0		
Incr Delay (d2), s/veh	6.6	0.0	13.1	0.6	1.7	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.7	0.0	4.1	4.1	6.7	0.0		
LnGrp Delay(d),s/veh	30.2	0.0	38.2	4.8	13.1	0.0		
LnGrp LOS	C		D	A	B			
Approach Vol, veh/h	258			1288	1052			
Approach Delay, s/veh	30.2			10.0	13.1			
Approach LOS	C			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		45.3		14.7	12.3	33.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	10.0	22.0		
Max Q Clear Time (g_c+l1), s		10.3		10.4	8.5	15.1		
Green Ext Time (p_c), s		12.7		0.5	0.1	5.1		
Intersection Summary								
HCM 2010 Ctrl Delay			13.3					
HCM 2010 LOS			B					

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	26	100	72	1292	1228	33
Future Vol, veh/h	26	100	72	1292	1228	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	250	0	400	-	-	325
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	103	74	1332	1266	34

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2080	633	1266 0
Stage 1	1266	-	- -
Stage 2	814	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	46	422	545 -
Stage 1	229	-	- -
Stage 2	396	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	40	422	545 -
Mov Cap-2 Maneuver	40	-	- -
Stage 1	229	-	- -
Stage 2	342	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	54.5	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	545	-	40	422	-	-
HCM Lane V/C Ratio	0.136	-	0.67	0.244	-	-
HCM Control Delay (s)	12.6	-	201.5	16.3	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.5	-	2.5	0.9	-	-

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	61	15	490	99	24	488
Future Vol, veh/h	61	15	490	99	24	488
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	16	533	108	26	530

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	1169	586	0	0	640	0
Stage 1	586	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	213	510	-	-	944	-
Stage 1	556	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	205	510	-	-	944	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.1	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	205	510	944	-
HCM Lane V/C Ratio	-	-	0.323	0.032	0.028	-
HCM Control Delay (s)	-	-	30.7	12.3	8.9	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.1	0.1	-

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	42	70	40	1344	1223	53
Future Vol, veh/h	42	70	40	1344	1223	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	0	0	475	-	-	375
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	74	42	1415	1287	56

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2079	644	1287 0
Stage 1	1287	-	- -
Stage 2	792	-	- -
Critical Hdwy	6.84	6.94	4.14 -
Critical Hdwy Stg 1	5.84	-	- -
Critical Hdwy Stg 2	5.84	-	- -
Follow-up Hdwy	3.52	3.32	2.22 -
Pot Cap-1 Maneuver	46	416	535 -
Stage 1	223	-	- -
Stage 2	407	-	- -
Platoon blocked, %			-
Mov Cap-1 Maneuver	~ 42	416	535 -
Mov Cap-2 Maneuver	~ 42	-	- -
Stage 1	223	-	- -
Stage 2	375	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	123.8	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	535	-	42	416	-
HCM Lane V/C Ratio	0.079	-	1.053	0.177	-
HCM Control Delay (s)	12.3	-	\$ 304.4	15.5	-
HCM Lane LOS	B	-	F	C	-
HCM 95th %tile Q(veh)	0.3	-	4.2	0.6	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection													
Int Delay, s/veh	5.3												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	32	49	2	12	36	47	1	5	12	85	3	12
Future Vol, veh/h	32	49	2	12	36	47	1	5	12	85	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	56	2	14	41	54	1	6	14	98	3	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	59	0	0	236	254	57	237	228	68
Stage 1	-	-	-	-	-	-	131	131	-	96	96	-
Stage 2	-	-	-	-	-	-	105	123	-	141	132	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1499	-	-	1545	-	-	718	650	1009	717	671	995
Stage 1	-	-	-	-	-	-	873	788	-	911	815	-
Stage 2	-	-	-	-	-	-	901	794	-	862	787	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1499	-	-	1545	-	-	687	628	1009	684	649	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	687	628	-	684	649	-
Stage 1	-	-	-	-	-	-	851	769	-	889	808	-
Stage 2	-	-	-	-	-	-	877	787	-	823	768	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0.9	9.4	10.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	687	856	1499	-	-	1545	-	-	684	899
HCM Lane V/C Ratio	0.002	0.023	0.025	-	-	0.009	-	-	0.143	0.019
HCM Control Delay (s)	10.2	9.3	7.5	-	-	7.4	-	-	11.1	9.1
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0	0.1	0.1	-	-	0	-	-	0.5	0.1

HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Existing (2016)
 Saturday Peak Ho

Intersection													
Int Delay, s/veh	3.6												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	30	77	9	4	42	5	8	1	4	4	2	45
Future Vol, veh/h	30	77	9	4	42	5	8	1	4	4	2	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	86	10	4	47	6	9	1	4	4	2	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	52	0	0	96	0	0	241	218	91	218	220	49
Stage 1	-	-	-	-	-	-	157	157	-	58	58	-
Stage 2	-	-	-	-	-	-	84	61	-	160	162	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1554	-	-	1498	-	-	713	680	967	738	678	1020
Stage 1	-	-	-	-	-	-	845	768	-	954	847	-
Stage 2	-	-	-	-	-	-	924	844	-	842	764	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1554	-	-	1498	-	-	664	664	967	720	662	1020
Mov Cap-2 Maneuver	-	-	-	-	-	-	664	664	-	720	662	-
Stage 1	-	-	-	-	-	-	827	752	-	934	845	-
Stage 2	-	-	-	-	-	-	874	842	-	819	748	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.6	10	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	735	1554	-	-	1498	-	-	968
HCM Lane V/C Ratio	0.02	0.021	-	-	0.003	-	-	0.059
HCM Control Delay (s)	10	7.4	-	-	7.4	-	-	9
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kaonoulu Street

8-Hour Warrant Condition A - 100%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kaonoulu Street	Major	2	600	3483	No	3428	No	2974	Pass	2950	No	2693	No	2600	No	2573	No	2538	No	No
	Minor	2	200	114		126		224		110		156		137		118		110		No

8-Hour Warrant Condition B - 100%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kaonoulu Street	Major	2	900	3483	Pass	3428	Pass	2974	Pass	2950	Pass	2693	Pass	2600	Pass	2573	Pass	2538	Pass	Pass
	Minor	2	100	114		126		224		110		156		137		118		110		Pass

8-Hour Warrant Condition A - 80%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kaonoulu Street	Major	2	480	3483	No	3428	No	2974	Pass	2950	No	2693	No	2600	No	2573	No	2538	No	No
	Minor	2	160	114		126		224		110		156		137		118		110		No

8-Hour Warrant Condition B - 80%

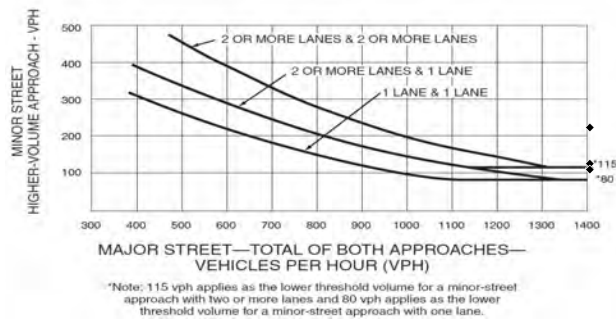
Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kaonoulu Street	Major	2	720	3483	Pass	3428	Pass	2974	Pass	2950	Pass	2693	Pass	2600	Pass	2573	Pass	2538	Pass	Pass
	Minor	2	80	114		126		224		110		156		137		118		110		Pass

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kaonoulu Street

4-Hour Warrant - Figure 4C-2

Major/Minor Roads	Approach Type	# of Lanes	1	2	3	4	Pass?			
Pi'ilani Highway / Kaonoulu Street	Major	2	3483		3428		2974	2950		
	Minor	2	114	No	126	Yes	224	Yes	110	No

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



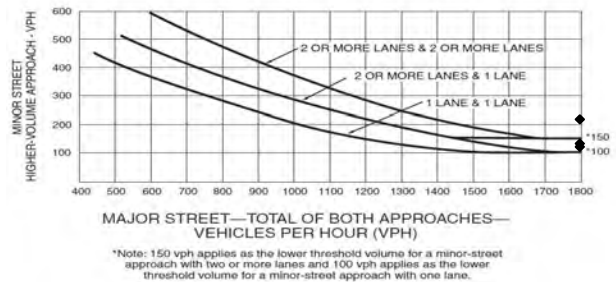
Source: MUTCD, 2009.

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kaonoulu Street

Peak Hour Warrant - Figure 4C-3

Major/Minor Roads	Approach Type	# of Lanes	AM Volume	Pass?	PM Volume	Pass?	SAT VOLUME	Pass?	Pass?
Pi'ilani Highway / Kaonoulu Street	Major	2	3050		3542	No	2625		
	Minor	2	228	Yes	123		126	No	Yes

Figure 4C-3. Warrant 3, Peak Hour



Source: MUTCD, 2009.

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kulanihakai Street

8-Hour Warrant Condition A - 100%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kulanihakai Street	Major	2	600	3554	No	3550	No	3127	No	3034	No	2820	No	2660	No	2656	No	2589	No	No
	Minor	2	200	142		121		174		35		196		112		106		99		No

8-Hour Warrant Condition B - 100%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kulanihakai Street	Major	2	900	3554	Pass	3550	Pass	3127	Pass	3034	No	2820	Pass	2660	Pass	2656	Pass	2589	No	No
	Minor	2	100	142		121		174		35		196		112		106		99		No

8-Hour Warrant Condition A - 80%

Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kulanihakai Street	Major	2	480	3554	No	3550	No	3127	Pass	3034	No	2820	Pass	2660	No	2656	No	2589	No	No
	Minor	2	160	142		121		174		35		196		112		106		99		No

8-Hour Warrant Condition B - 80%

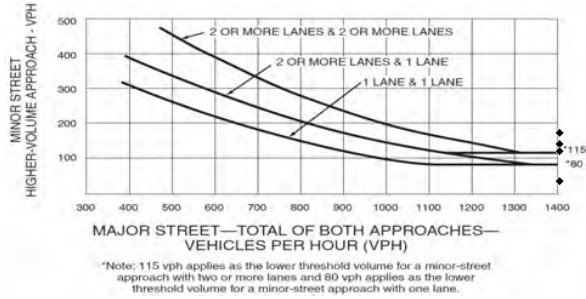
Major/Minor Roads	Approach Type	# of Lanes	Volume Threshold	1	2	3	4	5	6	7	8	Pass?								
Pi'ilani Highway / Kulanihakai Street	Major	2	720	3554	Pass	3550	Pass	3127	Pass	3034	No	2820	Pass	2660	Pass	2656	Pass	2589	Pass	No
	Minor	2	80	142		121		174		35		196		112		106		99		No

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kulanihakai Street

4-Hour Warrant - Figure 4C-2

Major/Minor Roads	Approach Type	# of Lanes	1	2	3	4	Pass?				
Pi'ilani Highway / Kulanihakai Street	Major	2	3554	Yes	3550	Yes	3127	Yes	3034	No	No
	Minor	2	142		121		174		35		No

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



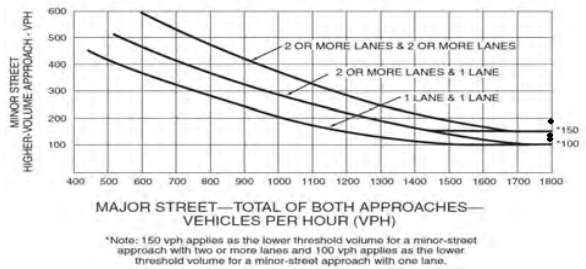
Source: MUTCD, 2009.

Traffic Signal Warrants - Existing (2016)
Pi'ilani Highway and Kulanihakai Street

Peak Hour Warrant - Figure 4C-3

Major/Minor Roads	Approach Type	# of Lanes	AM Volume	Pass?	PM Volume	Pass?	SAT VOLUME	Pass?	Pass?
Pi'ilani Highway / Kulanihakai Street	Major	2	3218	Yes	3613	No	2660	No	Yes
	Minor	2	190		134		112		

Figure 4C-3. Warrant 3, Peak Hour



Source: MUTCD, 2009.

Appendix E

County of Maui South Maui
Development Map

South Kihei - Makena - Ulupalakua Development Projects

Legend

- Development Project Classes**
- Committed
 - MIP and CP
 - MIP Only
 - DHHL Near Term
 - DHHL Long Term
 - Project Depicted on Adjacent Map
- Maui Island Plan Growth Boundaries**
- Urban
 - Small Town
 - Rural



LOCATION MAP

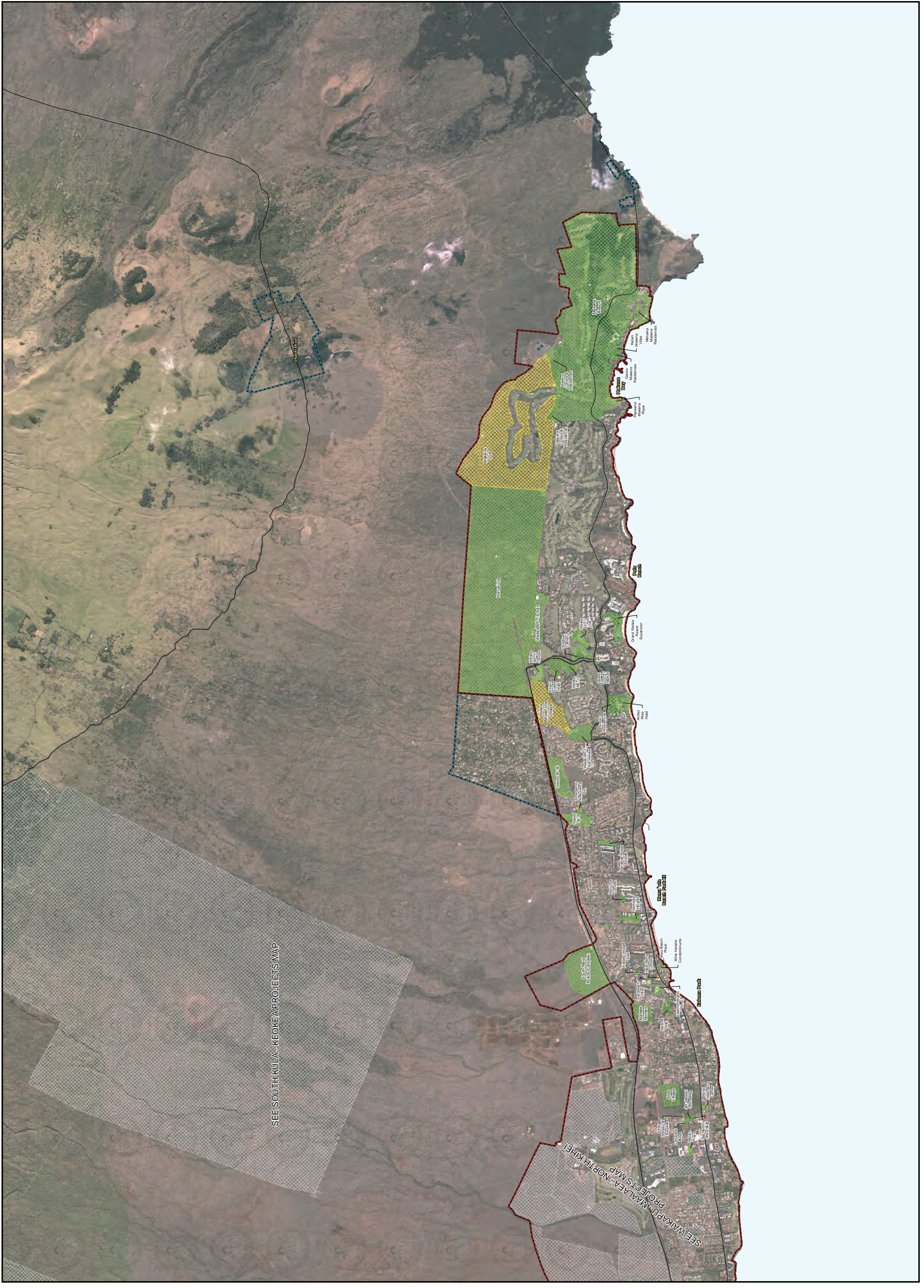
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0 0.25 0.5 1 Miles

PREPARED BY:
 Long Range Planning Division
 Department of Planning
 County of Maui
 One Main Plaza
 2200 Main Street, Ste. 601
 Wailuku, Hawaii 96793



Projects by Geographic Map Extent	Unit Types		
	Single Family	Multi-Family	Time Share and Hotel
Committed (Entire)			
Ahalele Homes	48	0	0
Antez Maui Hotel	0	0	250
Antez Residences	0	12	0
Cone Beach Villas	0	32	0
Carolei Makana Residences	15	0	0
Grand Wailea Resort Expansion	0	0	300
Honua Iki	560	560	0
Kalani Heights Ph. 2	0	36	0
Kalani Hills	17	0	0
Kalani Makana Villas	4	0	0
Kalani Heights	0	88	24
Kihei Hawaii Condominiums	0	4	0
Liha Village	65	0	0
Makana Condos & Residences	10	825	0
Makana Makana Residences	13	0	0
Maui Beach Plaza	0	3	0
Nani Lee Condos	0	32	0
Papaiahi Makana Place	7	0	0
Paradise Ridge Estates	0	32	0
Pihani Suites Hotel	0	0	200
Wailea MF-10	9	36	0
Wailea MF-11 Condos	0	70	0
Wailea MF-13 Lots	9	0	0
Wailea MF-7 Kila Wailea	0	75	0
Wailea SF-11 Lots	16	0	0
Wailea SF-58	58	0	0
Wailea SF-9	60	0	0
Wailela Village Apts	0	18	0
SUB-TOTAL	861	1,943	814
MIP and CP (Partly Entire)			
Hale Piha Condos	0	6	0
Makana Lots	149	600	0
Wailea Market Ultra Village	0	82	0
SUB-TOTAL	149	688	0
MIP Only			
SUB-TOTAL	0	0	0
TOTAL	1,030	2,649	814

Projects depicted on this map which do not appear in this list above have no residential units planned.

Definitions and Disclaimers for the Development Projects Maps
 The development projects shown are those projects that have come to the attention of the Department of Planning. There are certain to be other developments being contemplated or planned by private individuals or companies for some areas within the Maui Island Plan growth boundaries depicted. The growth boundaries indicate the expected limits to higher density development already partially or fully developed, and other areas where no development proposals have been brought to the attention of the Department of Planning. The Department of Planning does not have the authority to approve or deny the units and subdivisions of lots less than 4 lots. Therefore, this is not a complete depiction of the units to be developed in the county, and these maps are not intended to be used for any other purpose.

Projects identified as "MIP Only" do not have inclusion in the Maui Island Plan Growth Boundaries and generally are not in the current Community Plan and zoning designations for the project. "Committee" refers to the status of the project as it relates to the Maui Island Plan. Projects identified as "MIP and CP" have inclusion in the Maui Island Plan Growth Boundaries and the appropriate urban or rural Community Plan designations for the project. Projects identified as "MIP Only" do not have inclusion in the Maui Island Plan Growth Boundaries and the appropriate urban or rural Community Plan designations for the project. Projects identified as "MIP and CP" have inclusion in the Maui Island Plan Growth Boundaries and the appropriate urban or rural Community Plan designations for the project. Projects identified as "MIP Only" do not have inclusion in the Maui Island Plan Growth Boundaries and the appropriate urban or rural Community Plan designations for the project.

Projects identified as "DHHL Long Term" are Department of Hawaiian Home Lands (DHHL) projects planned to be related within the current planning horizon. Projects identified as "DHHL Near Term" are Department of Hawaiian Home Lands (DHHL) projects with projections beyond the current planning horizon. Projects identified as "DHHL Long Term" are Department of Hawaiian Home Lands (DHHL) projects with projections beyond the current planning horizon. Projects identified as "DHHL Near Term" are Department of Hawaiian Home Lands (DHHL) projects with projections beyond the current planning horizon.

Waikapu - Maalaea - North Kihei Development Projects

Legend

- Development Project Classes**
- Committed
 - MIP and CP
 - MIP Only
 - DHHL Near Term
 - DHHL Long Term
 - Project Depicted on Adjacent Map
- Maui Island Plan Growth Boundaries**
- Urban
 - Small Town
 - Rural



LOCATION MAP

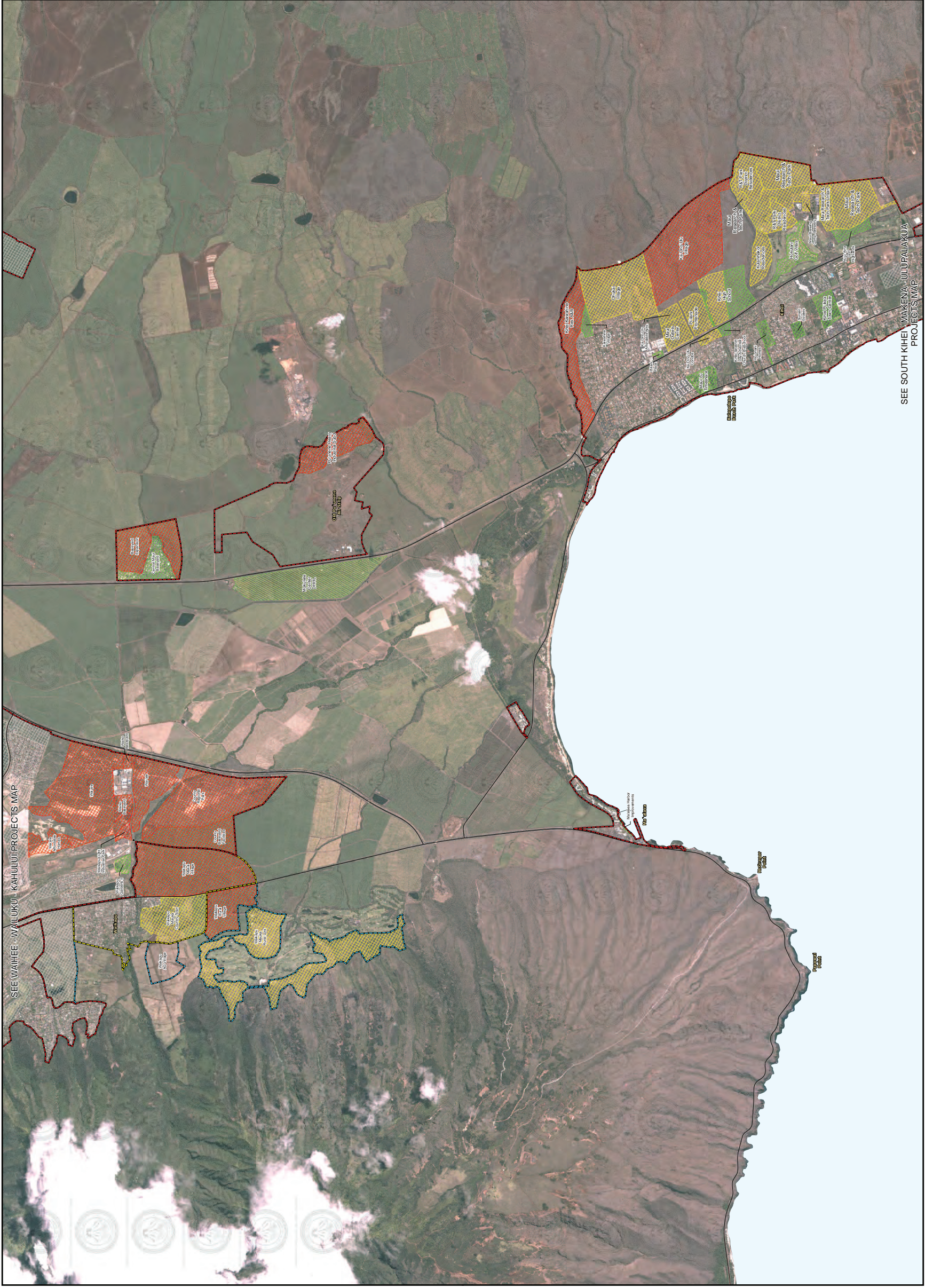
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 Long Range Planning Division
 Department of Planning
 County of Maui
 One Main Plaza
 2200 Main Street, Ste. 601
 Wailuku, Hawaii 96793



Projects by Geographic Map Extent	Unit Types			
	Single Family	Multi-Family	Time Share	Hotel
Committed (Estimate)				
215 Ocean Homes	25	0	0	0
Island Golf Villas	150	0	0	0
Kaunohiwi Village	0	100	0	0
Maui Equestrian Center	0	0	150	0
Maui U Tennis	0	0	300	0
Ni'u Aha Golf Highlands	0	0	64	0
Summit Estates	25	0	0	0
Waikapu Gardens II	50	0	0	0
SUB-TOTAL	211	100	184	0
MIP and CP (Partly Estimate)				
Ko'oko'o Village Affordable Aff.	0	200	0	0
Ko'oko'o Village Condos	0	166	0	0
Ko'oko'o Village Residences	0	251	0	0
Maui Renaissance & Town Park District Residences	0	800	0	0
Ohia'i Village	200	100	0	0
Waikapu Maalaea County Town	270	195	0	0
Waikapu Maalaea Rural Lots	304	0	0	0
SUB-TOTAL	1,000	1,452	0	0
MIP Only				
Ko'oko'o Village Affordable Aff.	1,000	0	0	0
Ko'oko'o Village Condos	400	200	0	0
Maui U	1,127	1,127	0	0
Maui U Affordable Homes	0	300	0	0
Waikapu Maalaea Village	495	513	0	0
Waikapu Rural Lots	25	0	0	0
SUB-TOTAL	3,627	2,140	0	0
TOTAL	6,838	3,592	0	0

Percentages based on the total number of units shown in the table above are not necessarily additive.

Definitions and Disclaimers for the Development Projects Maps

The development projects shown on these maps are those projects that have come to the attention of the Department of Planning. There are certain to be other developments being contemplated or planned by private individuals or organizations that are not shown on these maps. The maps are intended for informational purposes only and do not constitute a commitment by the County of Maui to approve or fund any of the projects shown. The maps are intended to provide a general overview of the projects and are not intended to be used for legal purposes. The maps are intended to provide a general overview of the projects and are not intended to be used for legal purposes.

























The maps are intended to provide a general overview of the projects and are not intended to be used for legal purposes. The maps are intended to provide a general overview of the projects and are not intended to be used for legal purposes.

Appendix F

Analysis Reports Future (2025) and
(2032) Without Project Conditions

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) Without Project
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	104	101	317	64	219	27	1130	137	211	1737	29
Future Volume (veh/h)	106	104	101	317	64	219	27	1130	137	211	1737	29
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	111	0	337	68	0	29	1202	0	224	1848	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	206	175	306	372	316	97	1659	742	257	1980	886
Arrive On Green	0.08	0.11	0.00	0.17	0.20	0.00	0.05	0.47	0.00	0.14	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	111	0	337	68	0	29	1202	0	224	1848	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.0	8.2	0.0	25.0	4.4	0.0	2.3	39.6	0.0	17.9	69.8	0.0
Cycle Q Clear(g_c), s	9.0	8.2	0.0	25.0	4.4	0.0	2.3	39.6	0.0	17.9	69.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	206	175	306	372	316	97	1659	742	257	1980	886
V/C Ratio(X)	0.77	0.54	0.00	1.10	0.18	0.00	0.30	0.72	0.00	0.87	0.93	0.00
Avail Cap(c_a), veh/h	208	308	262	306	411	349	135	1659	742	281	1980	886
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.61	0.61	0.00
Uniform Delay (d), s/veh	65.1	61.0	0.0	60.0	48.2	0.0	65.9	31.0	0.0	60.7	29.5	0.0
Incr Delay (d2), s/veh	10.3	2.2	0.0	81.6	0.2	0.0	0.6	2.8	0.0	14.4	6.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.3	0.0	19.2	2.3	0.0	1.1	20.0	0.0	9.8	35.6	0.0
LnGrp Delay(d),s/veh	75.4	63.2	0.0	141.6	48.4	0.0	66.5	33.8	0.0	75.1	35.9	0.0
LnGrp LOS	E	E		F	D		E	C		E	D	
Approach Vol, veh/h		224			405			1231			2072	
Approach Delay, s/veh		69.4			125.9			34.5			40.1	
Approach LOS		E			F			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	72.0	15.1	32.9	11.9	85.1	28.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	22.0	57.0	16.0	31.0	10.0	69.0	24.0	23.0				
Max Q Clear Time (g_c+I1), s	19.9	41.6	11.0	6.4	4.3	71.8	27.0	10.2				
Green Ext Time (p_c), s	0.1	15.0	0.1	0.6	0.0	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			48.9									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) Without Project
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	31	98	198	29	164	31	1345	70	54	1635	20
Future Volume (veh/h)	84	31	98	198	29	164	31	1345	70	54	1635	20
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	90	33	0	213	31	0	33	1446	0	58	1758	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	83	70	178	83	70	407	2663	1191	138	1992	891
Arrive On Green	0.05	0.04	0.00	0.05	0.04	0.00	0.23	0.75	0.00	0.04	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	90	33	0	213	31	0	33	1446	0	58	1758	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	6.8	2.3	0.0	7.0	2.2	0.0	2.0	23.1	0.0	2.2	58.2	0.0
Cycle Q Clear(g_c), s	6.8	2.3	0.0	7.0	2.2	0.0	2.0	23.1	0.0	2.2	58.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	83	70	178	83	70	407	2663	1191	138	1992	891
V/C Ratio(X)	0.98	0.40	0.00	1.19	0.37	0.00	0.08	0.54	0.00	0.42	0.88	0.00
Avail Cap(c_a), veh/h	92	359	305	178	359	305	407	2663	1191	280	1992	891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.66	0.66	0.00	0.64	0.64	0.00
Uniform Delay (d), s/veh	63.9	62.7	0.0	64.0	62.7	0.0	40.8	7.0	0.0	63.2	25.6	0.0
Incr Delay (d2), s/veh	86.5	4.4	0.0	129.1	4.0	0.0	0.0	0.5	0.0	0.5	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	1.3	0.0	6.5	1.2	0.0	1.0	11.2	0.0	1.1	29.4	0.0
LnGrp Delay(d),s/veh	150.4	67.1	0.0	193.1	66.6	0.0	40.8	7.5	0.0	63.7	29.6	0.0
LnGrp LOS	F	E		F	E		D	A		E	C	
Approach Vol, veh/h		123			244			1479			1816	
Approach Delay, s/veh		128.1			177.0			8.3			30.7	
Approach LOS		F			F			A			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	105.6	10.0	10.0	35.0	80.0	10.0	10.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	10.0	75.0	6.0	25.0	10.0	75.0	6.0	25.0				
Max Q Clear Time (g_c+I), s	11.2	25.1	8.8	4.2	4.0	60.2	9.0	4.3				
Green Ext Time (p_c), s	0.0	23.8	0.0	0.2	3.1	12.3	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				34.7								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) Without Project
AM Peak Hour

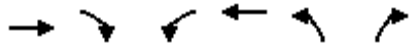


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔↕	↔	↕		↔↕	↕↕	↔	↔	↕↕	↔
Traffic Volume (veh/h)	217	3	458	8	1	21	531	1110	5	2	1252	151
Future Volume (veh/h)	217	3	458	8	1	21	531	1110	5	2	1252	151
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	235	0	0	9	1	23	571	1194	0	2	1346	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	0	297	102	4	88	645	2222	955	4	1566	701
Arrive On Green	0.11	0.00	0.00	0.06	0.06	0.03	0.19	0.63	0.00	0.00	0.44	0.00
Sat Flow, veh/h	3548	0	3167	1774	66	1527	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	235	0	0	9	0	24	571	1194	0	2	1346	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1593	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.0	0.0	0.0	0.4	0.0	1.2	12.9	15.2	0.0	0.1	27.4	0.0
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.4	0.0	1.2	12.9	15.2	0.0	0.1	27.4	0.0
Prop In Lane	1.00		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	399	0	297	102	0	92	645	2222	955	4	1566	701
V/C Ratio(X)	0.59	0.00	0.00	0.09	0.00	0.26	0.88	0.54	0.00	0.52	0.86	0.00
Avail Cap(c_a), veh/h	399	0	297	155	0	139	645	2222	955	89	1566	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.00	1.00	0.00	1.00	0.77	0.77	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.7	0.0	0.0	35.7	0.0	37.0	31.7	8.4	0.0	39.9	20.1	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.4	0.0	1.5	11.1	0.7	0.0	34.8	6.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	0.2	0.0	0.6	7.1	7.5	0.0	0.1	14.7	0.0
LnGrp Delay(d),s/veh	35.9	0.0	0.0	36.1	0.0	38.5	42.8	9.1	0.0	74.6	26.4	0.0
LnGrp LOS	D			D			D	D	A		E	C
Approach Vol, veh/h		235			33			1765			1348	
Approach Delay, s/veh		35.9			37.8			20.0			26.5	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	54.2		8.6	19.0	39.4		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	42.0			5.0	14.5	31.0		7.0				
Max Q Clear Time (g_c+I), s	17.2			3.2	14.9	29.4		7.0				
Green Ext Time (p_c), s	0.0	21.2		0.0	0.0	1.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			23.9									
HCM 2010 LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD













Future (2025) Without Project
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	379	262	93	521	597	247		
Future Volume (veh/h)	379	262	93	521	597	247		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	395	0	97	543	622	257		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	900	765	153	2253	792	325		
Arrive On Green	0.48	0.00	0.09	0.64	0.23	0.21		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	395	0	97	543	622	257		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	8.3	0.0	3.2	4.0	10.2	9.2		
Cycle Q Clear(g_c), s	8.3	0.0	3.2	4.0	10.2	9.2		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	900	765	153	2253	792	325		
V/C Ratio(X)	0.44	0.00	0.63	0.24	0.79	0.79		
Avail Cap(c_a), veh/h	900	765	177	2253	803	330		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.63	0.63	1.00	1.00		
Uniform Delay (d), s/veh	10.2	0.0	26.5	4.7	21.7	22.6		
Incr Delay (d2), s/veh	1.6	0.0	2.1	0.2	4.6	11.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.7	0.0	1.7	1.9	5.3	5.1		
LnGrp Delay(d),s/veh	11.7	0.0	28.6	4.8	26.3	33.8		
LnGrp LOS	B		C	A	C	C		
Approach Vol, veh/h	395			640	879			
Approach Delay, s/veh	11.7			8.4	28.5			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.2	33.0				42.2		17.8
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.5					36.5		12.5
Max Q Clear Time (g_c+I_T), s	10.3					6.0		12.2
Green Ext Time (p_c), s	0.0	7.5				10.3		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			18.3					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) Without Project
AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	283	217	191	1402	1969	434		
Future Volume (veh/h)	283	217	191	1402	1969	434		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	301	0	203	1491	2095	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	315	281	197	2595	2045	915		
Arrive On Green	0.18	0.00	0.11	0.73	0.58	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	301	0	203	1491	2095	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	15.1	0.0	10.0	17.5	52.0	0.0		
Cycle Q Clear(g_c), s	15.1	0.0	10.0	17.5	52.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	315	281	197	2595	2045	915		
V/C Ratio(X)	0.95	0.00	1.03	0.57	1.02	0.00		
Avail Cap(c_a), veh/h	315	281	197	2595	2045	915		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	36.6	0.0	40.0	5.5	19.0	0.0		
Incr Delay (d2), s/veh	38.5	0.0	72.1	0.9	26.4	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.2	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.7	0.0	8.8	8.6	32.5	0.0		
LnGrp Delay(d),s/veh	75.2	0.0	112.3	6.5	45.4	0.0		
LnGrp LOS	E		F	A	F			
Approach Vol, veh/h	301			1694	2095			
Approach Delay, s/veh	75.2			19.1	45.4			
Approach LOS	E			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		70.0		20.0	14.0	56.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		66.0		16.0	10.0	52.0		
Max Q Clear Time (g_c+l1), s		19.5		17.1	12.0	54.0		
Green Ext Time (p_c), s		36.2		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			36.7					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) Without Project
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	63	295	120	1341	2087	117		
Future Volume (veh/h)	63	295	120	1341	2087	117		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	66	0	126	1412	2197	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	86	77	138	3052	2620	1172		
Arrive On Green	0.05	0.00	0.08	0.86	0.74	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	66	0	126	1412	2197	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	3.3	0.0	6.3	8.2	38.3	0.0		
Cycle Q Clear(g_c), s	3.3	0.0	6.3	8.2	38.3	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	86	77	138	3052	2620	1172		
V/C Ratio(X)	0.76	0.00	0.91	0.46	0.84	0.00		
Avail Cap(c_a), veh/h	315	281	138	3052	2620	1172		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	42.3	0.0	41.2	1.4	8.0	0.0		
Incr Delay (d2), s/veh	13.0	0.0	51.3	0.5	3.4	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.9	0.0	5.1	3.9	19.5	0.0		
LnGrp Delay(d),s/veh	55.3	0.0	92.5	1.9	11.4	0.0		
LnGrp LOS	E		F	A	B			
Approach Vol, veh/h	66			1538	2197			
Approach Delay, s/veh	55.3			9.3	11.4			
Approach LOS	E			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		81.6		8.4	11.0	70.6		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		66.0		16.0	7.0	55.0		
Max Q Clear Time (g_c+l1), s		10.2		5.3	8.3	40.3		
Green Ext Time (p_c), s		42.2		0.1	0.0	13.5		
Intersection Summary								
HCM 2010 Ctrl Delay			11.3					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) Without Project
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	90	42	659	103	35	487		
Future Volume (veh/h)	90	42	659	103	35	487		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	98	46	716	112	38	529		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	150	134	1077	168	55	1457		
Arrive On Green	0.08	0.08	0.68	0.68	0.03	0.78		
Sat Flow, veh/h	1774	1583	1573	246	1774	1863		
Grp Volume(v), veh/h	98	46	0	828	38	529		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1819	1774	1863		
Q Serve(g_s), s	3.2	1.6	0.0	15.8	1.3	5.2		
Cycle Q Clear(g_c), s	3.2	1.6	0.0	15.8	1.3	5.2		
Prop In Lane	1.00	1.00		0.14	1.00			
Lane Grp Cap(c), veh/h	150	134	0	1245	55	1457		
V/C Ratio(X)	0.65	0.34	0.00	0.67	0.68	0.36		
Avail Cap(c_a), veh/h	473	422	0	1245	118	1457		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	26.6	25.9	0.0	5.5	28.8	2.0		
Incr Delay (d2), s/veh	4.8	1.5	0.0	2.8	13.9	0.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.8	0.8	0.0	8.8	0.8	2.8		
LnGrp Delay(d),s/veh	31.4	27.4	0.0	8.3	42.6	2.7		
LnGrp LOS	C	C		A	D	A		
Approach Vol, veh/h	144		828			567		
Approach Delay, s/veh	30.1		8.3			5.4		
Approach LOS	C		A			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.9	45.1				50.9		9.1
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	28.0					36.0		16.0
Max Q Clear Time (g_c+I), s	17.8					7.2		5.2
Green Ext Time (p_c), s	0.0	5.0				8.1		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			9.3					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET/Kihei HS Access

Future (2025) Without Project
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	26	75	139	155	15	60	47	1387	285	120	2219	59
Future Volume (veh/h)	26	75	139	155	15	60	47	1387	285	120	2219	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	27	82	0	168	16	0	49	1460	0	130	2336	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	245	258	252	19	258	59	2294	1026	157	2490	1114
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.00	0.03	0.65	0.00	0.09	0.70	0.00
Sat Flow, veh/h	316	1501	1583	1192	114	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	109	0	0	184	0	0	49	1460	0	130	2336	0
Grp Sat Flow(s),veh/h/ln	1817	0	1583	1306	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	10.3	0.0	0.0	3.3	29.6	0.0	8.6	69.1	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	16.6	0.0	0.0	3.3	29.6	0.0	8.6	69.1	0.0
Prop In Lane	0.25		1.00	0.91		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	334	0	258	270	0	258	59	2294	1026	157	2490	1114
V/C Ratio(X)	0.33	0.00	0.00	0.68	0.00	0.00	0.83	0.64	0.00	0.83	0.94	0.00
Avail Cap(c_a), veh/h	426	0	343	342	0	343	59	2294	1026	237	2490	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.6	0.0	0.0	49.1	0.0	0.0	57.7	12.6	0.0	53.8	15.5	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	3.8	0.0	0.0	60.4	1.4	0.0	13.7	8.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	6.2	0.0	0.0	2.6	14.8	0.0	4.8	36.0	0.0
LnGrp Delay(d),s/veh	45.2	0.0	0.0	52.9	0.0	0.0	118.0	14.0	0.0	67.4	23.9	0.0
LnGrp LOS	D			D			F	B		E	C	
Approach Vol, veh/h		109			184			1509			2466	
Approach Delay, s/veh		45.2			52.9			17.4			26.2	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	44.6	81.8		23.6	8.0	88.4		23.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	66.0	66.0		26.0	4.0	78.0		26.0				
Max Q Clear Time (g_c+I), s	31.6	31.6		8.3	5.3	71.1		18.6				
Green Ext Time (p_c), s	0.1	29.9		1.6	0.0	6.7		1.0				
Intersection Summary												
HCM 2010 Ctrl Delay				24.7								
HCM 2010 LOS				C								

HCM 2010 TWSC
 9: KENOLIO ROAD & KAONOULU STREET

Future (2025) Without Project
 AM Peak Hour

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	133	22	37	125	70	22	8	54	176	8	15
Future Vol, veh/h	28	133	22	37	125	70	22	8	54	176	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	140	23	39	132	74	23	8	57	185	8	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	163	0	0	469	494	152	489	468	168
Stage 1	-	-	-	-	-	-	211	211	-	246	246	-
Stage 2	-	-	-	-	-	-	258	283	-	243	222	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1366	-	-	1416	-	-	505	476	894	489	493	876
Stage 1	-	-	-	-	-	-	791	728	-	758	703	-
Stage 2	-	-	-	-	-	-	747	677	-	761	720	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1366	-	-	1416	-	-	471	453	894	435	469	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	471	453	-	435	469	-
Stage 1	-	-	-	-	-	-	774	713	-	742	684	-
Stage 2	-	-	-	-	-	-	705	658	-	689	705	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			1.2			10.7			18.3		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	471	794	1366	-	-	1416	-	-	435	673		
HCM Lane V/C Ratio	0.049	0.082	0.022	-	-	0.028	-	-	0.426	0.036		
HCM Control Delay (s)	13	9.9	7.7	-	-	7.6	-	-	19.3	10.5		
HCM Lane LOS	B	A	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	2.1	0.1		

HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Future (2025) Without Project
 AM Peak Hour

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↕			↕		
Traffic Vol, veh/h	43	145	11	8	150	7	14	0	8	10	0	56
Future Vol, veh/h	43	145	11	8	150	7	14	0	8	10	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	161	12	9	167	8	16	0	9	11	0	62

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	174	0	0	173	0	0	482	455	167	455	457	171
Stage 1	-	-	-	-	-	-	263	263	-	188	188	-
Stage 2	-	-	-	-	-	-	219	192	-	267	269	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1403	-	-	1404	-	-	495	501	877	515	500	873
Stage 1	-	-	-	-	-	-	742	691	-	814	745	-
Stage 2	-	-	-	-	-	-	783	742	-	738	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1403	-	-	1404	-	-	446	481	877	494	480	873
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	481	-	494	480	-
Stage 1	-	-	-	-	-	-	717	667	-	786	740	-
Stage 2	-	-	-	-	-	-	723	737	-	706	663	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.4	11.9	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	543	1403	-	-	1404	-	-	782
HCM Lane V/C Ratio	0.045	0.034	-	-	0.006	-	-	0.094
HCM Control Delay (s)	11.9	7.7	-	-	7.6	-	-	10.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3

HCM 2010 Signalized Intersection Summary
1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) Without Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	91	76	235	71	213	59	1887	216	183	1813	85
Future Volume (veh/h)	75	91	76	235	71	213	59	1887	216	183	1813	85
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	77	94	0	242	73	0	61	1945	0	189	1869	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	175	149	240	317	269	109	2040	913	188	2198	983
Arrive On Green	0.06	0.09	0.00	0.14	0.17	0.00	0.06	0.58	0.00	0.11	0.62	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	77	94	0	242	73	0	61	1945	0	189	1869	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.3	8.2	0.0	23.0	5.8	0.0	5.7	87.8	0.0	18.0	72.1	0.0
Cycle Q Clear(g_c), s	7.3	8.2	0.0	23.0	5.8	0.0	5.7	87.8	0.0	18.0	72.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	105	175	149	240	317	269	109	2040	913	188	2198	983
V/C Ratio(X)	0.73	0.54	0.00	1.01	0.23	0.00	0.56	0.95	0.00	1.01	0.85	0.00
Avail Cap(c_a), veh/h	146	263	224	240	362	307	115	2040	913	188	2198	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.49	0.49	0.00
Uniform Delay (d), s/veh	78.6	73.5	0.0	73.5	60.9	0.0	77.5	33.8	0.0	76.0	25.9	0.0
Incr Delay (d2), s/veh	11.1	2.5	0.0	60.2	0.4	0.0	2.9	11.6	0.0	47.4	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.4	0.0	15.3	3.0	0.0	2.9	46.0	0.0	11.3	35.7	0.0
LnGrp Delay(d),s/veh	89.7	76.0	0.0	133.8	61.3	0.0	80.4	45.5	0.0	123.4	28.1	0.0
LnGrp LOS	F	E		F	E		F	D		F	C	
Approach Vol, veh/h		171			315			2006			2058	
Approach Delay, s/veh		82.2			117.0			46.5			36.8	
Approach LOS		F			F			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	102.0	13.1	32.9	14.4	109.6	26.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	17.0	89.0	13.0	32.0	10.0	96.0	22.0	23.0				
Max Q Clear Time (g_c+I1), s	20.0	89.8	9.3	7.8	7.7	74.1	25.0	10.2				
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.0	21.7	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			48.4									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	50	52	112	26	86	49	1893	144	148	1917	65
Future Volume (veh/h)	31	50	52	112	26	86	49	1893	144	148	1917	65
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	32	52	0	115	27	0	51	1952	0	153	1976	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	126	107	208	170	144	129	2228	997	250	2228	997
Arrive On Green	0.04	0.07	0.00	0.06	0.09	0.00	0.07	0.63	0.00	0.07	0.63	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	32	52	0	115	27	0	51	1952	0	153	1976	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	1.5	2.2	0.0	2.7	1.1	0.0	2.3	37.6	0.0	3.6	38.7	0.0
Cycle Q Clear(g_c), s	1.5	2.2	0.0	2.7	1.1	0.0	2.3	37.6	0.0	3.6	38.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	126	107	208	170	144	129	2228	997	250	2228	997
V/C Ratio(X)	0.48	0.41	0.00	0.55	0.16	0.00	0.40	0.88	0.00	0.61	0.89	0.00
Avail Cap(c_a), veh/h	129	519	441	208	496	422	129	2228	997	250	2228	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.0	36.9	0.0	37.7	34.6	0.0	36.6	12.6	0.0	37.2	12.8	0.0
Incr Delay (d2), s/veh	5.4	3.0	0.0	3.1	0.6	0.0	0.7	5.2	0.0	3.2	5.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.2	0.0	1.4	0.6	0.0	1.1	19.8	0.0	1.8	20.4	0.0
LnGrp Delay(d),s/veh	44.4	39.9	0.0	40.8	35.2	0.0	37.3	17.9	0.0	40.4	18.5	0.0
LnGrp LOS	D	D		D	D		D	B		D	B	
Approach Vol, veh/h		84			142			2003			2129	
Approach Delay, s/veh		41.6			39.8			18.4			20.1	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	56.0	6.1	10.5	10.0	56.0	8.0	8.6				
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	51.0	5.0	21.0	5.0	51.0	4.0	22.0					
Max Q Clear Time (g_c+I), s	39.6	3.5	3.1	4.3	40.7	4.7	4.2					
Green Ext Time (p_c), s	0.0	10.3	0.0	0.3	0.7	9.4	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay				20.4								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	215	2	508	27	17	41	521	1518	18	5	1610	262
Future Volume (veh/h)	215	2	508	27	17	41	521	1518	18	5	1610	262
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	227	0	0	28	18	43	548	1598	0	5	1695	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	0	288	121	33	80	619	2356	1023	9	1738	778
Arrive On Green	0.11	0.00	0.00	0.07	0.07	0.05	0.18	0.67	0.00	0.01	0.49	0.00
Sat Flow, veh/h	3548	0	3167	1774	489	1168	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	227	0	0	28	0	61	548	1598	0	5	1695	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1657	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.3	0.0	0.0	1.5	0.0	3.7	16.0	28.3	0.0	0.3	48.1	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	1.5	0.0	3.7	16.0	28.3	0.0	0.3	48.1	0.0
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	374	0	288	121	0	113	619	2356	1023	9	1738	778
V/C Ratio(X)	0.61	0.00	0.00	0.23	0.00	0.54	0.89	0.68	0.00	0.54	0.98	0.00
Avail Cap(c_a), veh/h	621	0	508	121	0	113	619	2356	1023	69	1738	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.0	0.0	0.0	45.4	0.0	47.1	41.1	10.5	0.0	51.0	25.5	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	1.0	0.0	5.1	14.4	1.0	0.0	17.3	16.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	0.8	0.0	1.9	8.9	13.9	0.0	0.2	27.2	0.0
LnGrp Delay(d),s/veh	45.5	0.0	0.0	46.3	0.0	52.2	55.6	11.4	0.0	68.3	41.7	0.0
LnGrp LOS	D			D		D	E	B		E	D	
Approach Vol, veh/h		227			89			2146			1700	
Approach Delay, s/veh		45.5			50.3			22.7			41.7	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	72.4		11.0	22.5	54.5		14.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	63.0			5.0	18.0	48.5		16.0				
Max Q Clear Time (g_c+I), s	30.3			5.7	18.0	50.1		8.3				
Green Ext Time (p_c), s	0.0	30.8		0.0	0.0	0.0		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			32.3									
HCM 2010 LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2025) Without Project
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	496	483	190	510	441	236		
Future Volume (veh/h)	496	483	190	510	441	236		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	511	0	196	526	455	243		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	783	666	257	2269	715	284		
Arrive On Green	0.42	0.00	0.15	0.64	0.21	0.18		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	511	0	196	526	455	243		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	11.6	0.0	5.6	3.3	6.4	7.9		
Cycle Q Clear(g_c), s	11.6	0.0	5.6	3.3	6.4	7.9		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	783	666	257	2269	715	284		
V/C Ratio(X)	0.65	0.00	0.76	0.23	0.64	0.86		
Avail Cap(c_a), veh/h	985	837	302	2740	715	284		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.2	0.0	21.8	4.0	19.2	21.1		
Incr Delay (d2), s/veh	2.1	0.0	7.4	0.1	1.4	20.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.3	0.0	3.3	1.6	3.2	5.1		
LnGrp Delay(d),s/veh	14.3	0.0	29.2	4.1	20.6	41.9		
LnGrp LOS	B		C	A	C	D		
Approach Vol, veh/h	511			722	698			
Approach Delay, s/veh	14.3			10.9	28.0			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.7	26.3				38.0		15.0
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.5					39.5		9.5
Max Q Clear Time (g_c+I_T), s	13.6					5.3		9.9
Green Ext Time (p_c), s	0.1	7.2				12.2		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			18.0					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) Without Project
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	397	387	303	1928	1721	453		
Future Volume (veh/h)	397	387	303	1928	1721	453		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	401	0	306	1947	1738	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	394	352	296	2438	1691	756		
Arrive On Green	0.22	0.00	0.17	0.69	0.48	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	401	0	306	1947	1738	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	20.0	0.0	15.0	34.2	43.0	0.0		
Cycle Q Clear(g_c), s	20.0	0.0	15.0	34.2	43.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	394	352	296	2438	1691	756		
V/C Ratio(X)	1.02	0.00	1.03	0.80	1.03	0.00		
Avail Cap(c_a), veh/h	394	352	296	2438	1691	756		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	35.0	0.0	37.5	9.7	23.5	0.0		
Incr Delay (d2), s/veh	49.7	0.0	61.7	2.8	29.3	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	15.2	0.0	12.4	17.5	27.8	0.0		
LnGrp Delay(d),s/veh	84.8	0.0	99.2	12.5	52.8	0.0		
LnGrp LOS	F		F	B	F			
Approach Vol, veh/h	401			2253	1738			
Approach Delay, s/veh	84.8			24.3	52.8			
Approach LOS	F			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		66.0		24.0	19.0	47.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		62.0		20.0	15.0	43.0		
Max Q Clear Time (g_c+l1), s		36.2		22.0	17.0	45.0		
Green Ext Time (p_c), s		22.5		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			41.1					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) Without Project
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	102	216	151	2121	2014	131		
Future Volume (veh/h)	102	216	151	2121	2014	131		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	106	0	157	2209	2098	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	126	113	301	3120	2436	1090		
Arrive On Green	0.07	0.00	0.17	0.88	0.69	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	106	0	157	2209	2098	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	10.0	0.0	13.7	33.4	77.2	0.0		
Cycle Q Clear(g_c), s	10.0	0.0	13.7	33.4	77.2	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	126	113	301	3120	2436	1090		
V/C Ratio(X)	0.84	0.00	0.52	0.71	0.86	0.00		
Avail Cap(c_a), veh/h	198	177	301	3120	2436	1090		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	78.0	0.0	64.3	3.2	20.3	0.0		
Incr Delay (d2), s/veh	16.3	0.0	1.6	1.4	4.3	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	15.5	0.0	6.9	16.6	38.8	0.0		
LnGrp Delay(d),s/veh	94.3	0.0	65.9	4.6	24.6	0.0		
LnGrp LOS	F		E	A	C			
Approach Vol, veh/h	106			2366	2098			
Approach Delay, s/veh	94.3			8.6	24.6			
Approach LOS	F			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		153.9		16.1	32.9	121.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		143.0		19.0	22.0	117.0		
Max Q Clear Time (g_c+l1), s		35.4		12.0	15.7	79.2		
Green Ext Time (p_c), s		29.3		0.2	5.3	17.9		
Intersection Summary								
HCM 2010 Ctrl Delay			17.9					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) Without Project
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	84	52	795	172	55	835		
Future Volume (veh/h)	84	52	795	172	55	835		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	85	53	803	174	56	843		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	140	125	966	209	75	1432		
Arrive On Green	0.08	0.08	0.65	0.65	0.04	0.77		
Sat Flow, veh/h	1774	1583	1484	322	1774	1863		
Grp Volume(v), veh/h	85	53	0	977	56	843		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1806	1774	1863		
Q Serve(g_s), s	2.4	1.7	0.0	21.7	1.6	10.0		
Cycle Q Clear(g_c), s	2.4	1.7	0.0	21.7	1.6	10.0		
Prop In Lane	1.00	1.00		0.18	1.00			
Lane Grp Cap(c), veh/h	140	125	0	1175	75	1432		
V/C Ratio(X)	0.61	0.42	0.00	0.83	0.74	0.59		
Avail Cap(c_a), veh/h	539	481	0	1476	135	1805		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.4	23.1	0.0	7.0	24.9	2.6		
Incr Delay (d2), s/veh	4.2	2.3	0.0	3.4	13.4	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.3	0.8	0.0	11.4	1.1	5.1		
LnGrp Delay(d),s/veh	27.6	25.4	0.0	10.4	38.3	3.0		
LnGrp LOS	C	C		B	D	A		
Approach Vol, veh/h	138		977			899		
Approach Delay, s/veh	26.8		10.4			5.2		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.2	38.2				44.5		8.2
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	43.0					51.0		16.0
Max Q Clear Time (g_c+I), s	23.7					12.0		4.4
Green Ext Time (p_c), s	0.0	10.6				14.5		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			9.2					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2025) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	37	15	107	80	10	30	64	2207	65	25	2131	70
Future Volume (veh/h)	37	15	107	80	10	30	64	2207	65	25	2131	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	16	0	87	11	0	65	2252	0	27	2174	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.92	0.98	0.92	0.92	0.92	0.98	0.98	0.92	0.92	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	45	123	144	13	123	82	2410	1078	302	2851	1275
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.00	0.05	0.68	0.00	0.17	0.81	0.00
Sat Flow, veh/h	1102	583	1583	1338	169	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	54	0	0	98	0	0	65	2252	0	27	2174	0
Grp Sat Flow(s),veh/h/ln	685	0	1583	1507	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	5.7	0.0	0.0	6.2	94.9	0.0	2.2	52.7	0.0
Cycle Q Clear(g_c), s	5.0	0.0	0.0	10.8	0.0	0.0	6.2	94.9	0.0	2.2	52.7	0.0
Prop In Lane	0.70		1.00	0.89		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	0	123	157	0	123	82	2410	1078	302	2851	1275
V/C Ratio(X)	0.32	0.00	0.00	0.62	0.00	0.00	0.80	0.93	0.00	0.09	0.76	0.00
Avail Cap(c_a), veh/h	245	0	205	231	0	205	125	2706	1211	302	2851	1275
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	74.6	0.0	0.0	77.1	0.0	0.0	80.3	23.8	0.0	59.4	8.3	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	4.0	0.0	0.0	17.7	8.3	0.0	0.1	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	4.7	0.0	0.0	3.4	48.8	0.0	1.1	26.2	0.0
LnGrp Delay(d),s/veh	75.7	0.0	0.0	81.1	0.0	0.0	98.0	32.1	0.0	59.5	10.3	0.0
LnGrp LOS	E			F			F	C		E	B	
Approach Vol, veh/h		54			98			2317			2201	
Approach Delay, s/veh		75.7			81.1			33.9			10.9	
Approach LOS		E			F			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.0	119.8		17.2	11.8	140.9		17.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	130.0			22.0	12.0	124.0		22.0				
Max Q Clear Time (g_c+1), s	96.9			7.0	8.2	54.7		12.8				
Green Ext Time (p_c), s	1.6	18.9		0.7	0.0	23.9		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	48	168	31	63	149	125	20	8	44	105	12	18
Future Vol, veh/h	48	168	31	63	149	125	20	8	44	105	12	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	187	34	70	166	139	22	9	49	117	13	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	304	0	0	221	0	0	703	755	204	714	703	235
Stage 1	-	-	-	-	-	-	311	311	-	375	375	-
Stage 2	-	-	-	-	-	-	392	444	-	339	328	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1257	-	-	1348	-	-	352	338	837	346	362	804
Stage 1	-	-	-	-	-	-	699	658	-	646	617	-
Stage 2	-	-	-	-	-	-	633	575	-	676	647	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1257	-	-	1348	-	-	309	307	837	296	329	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	307	-	296	329	-
Stage 1	-	-	-	-	-	-	670	630	-	619	585	-
Stage 2	-	-	-	-	-	-	572	545	-	601	620	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.6			1.5			12.8			22.2		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	309	661	1257	-	-	1348	-	-	296	510		
HCM Lane V/C Ratio	0.072	0.087	0.042	-	-	0.052	-	-	0.394	0.065		
HCM Control Delay (s)	17.6	11	8	-	-	7.8	-	-	24.9	12.6		
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.2	-	-	1.8	0.2		

Intersection												
Int Delay, s/veh	2.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	79	233	14	9	169	9	5	0	6	9	0	51
Future Vol, veh/h	79	233	14	9	169	9	5	0	6	9	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	259	16	10	188	10	6	0	7	10	0	57

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	198	0	0	274	0	0	683	660	267	659	663	193
Stage 1	-	-	-	-	-	-	442	442	-	213	213	-
Stage 2	-	-	-	-	-	-	241	218	-	446	450	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1375	-	-	1289	-	-	363	383	772	377	382	849
Stage 1	-	-	-	-	-	-	594	576	-	789	726	-
Stage 2	-	-	-	-	-	-	762	723	-	591	572	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1375	-	-	1289	-	-	320	356	772	353	355	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	320	356	-	353	355	-
Stage 1	-	-	-	-	-	-	556	539	-	739	720	-
Stage 2	-	-	-	-	-	-	706	717	-	548	535	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.4	12.9	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	470	1375	-	-	1289	-	-	701
HCM Lane V/C Ratio	0.026	0.064	-	-	0.008	-	-	0.095
HCM Control Delay (s)	12.9	7.8	-	-	7.8	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.3

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) Without Project
 Timing Plan: Saturday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	67	60	180	70	186	56	1496	183	156	1419	60
Future Volume (veh/h)	66	67	60	180	70	186	56	1496	183	156	1419	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	69	0	186	72	0	58	1542	0	161	1463	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	226	192	224	356	303	132	1864	834	198	1996	893
Arrive On Green	0.06	0.12	0.00	0.13	0.19	0.00	0.07	0.53	0.00	0.11	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	68	69	0	186	72	0	58	1542	0	161	1463	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.0	4.4	0.0	13.5	4.3	0.0	4.1	48.1	0.0	11.7	40.5	0.0
Cycle Q Clear(g_c), s	5.0	4.4	0.0	13.5	4.3	0.0	4.1	48.1	0.0	11.7	40.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	100	226	192	224	356	303	132	1864	834	198	1996	893
V/C Ratio(X)	0.68	0.30	0.00	0.83	0.20	0.00	0.44	0.83	0.00	0.81	0.73	0.00
Avail Cap(c_a), veh/h	162	340	289	256	439	373	148	1882	842	229	2043	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	61.0	52.8	0.0	56.1	44.8	0.0	58.3	26.1	0.0	57.1	21.3	0.0
Incr Delay (d2), s/veh	7.8	0.8	0.0	18.2	0.3	0.0	0.9	3.6	0.0	15.2	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.3	0.0	7.7	2.2	0.0	2.0	24.3	0.0	6.6	20.2	0.0
LnGrp Delay(d),s/veh	68.8	53.5	0.0	74.3	45.1	0.0	59.2	29.7	0.0	72.3	23.0	0.0
LnGrp LOS	E	D		E	D		E	C		E	C	
Approach Vol, veh/h		137			258			1600			1624	
Approach Delay, s/veh		61.1			66.2			30.8			27.9	
Approach LOS		E			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.7	73.3	10.4	29.2	13.8	78.2	19.6	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	16.0	69.0	11.0	30.0	10.0	75.0	18.0	23.0				
Max Q Clear Time (g_c+I1), s	13.7	50.1	7.0	6.3	6.1	42.5	15.5	6.4				
Green Ext Time (p_c), s	0.1	18.2	0.1	0.5	0.0	30.8	0.2	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			33.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	32	71	86	22	87	62	1581	102	56	1503	28
Future Volume (veh/h)	33	32	71	86	22	87	62	1581	102	56	1503	28
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	34	33	0	88	22	0	63	1613	0	57	1534	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	83	71	161	110	94	155	2663	1191	142	2500	1118
Arrive On Green	0.03	0.04	0.00	0.05	0.06	0.00	0.09	0.75	0.00	0.04	0.71	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	34	33	0	88	22	0	63	1613	0	57	1534	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	2.5	2.2	0.0	3.3	1.5	0.0	4.4	27.0	0.0	2.1	29.3	0.0
Cycle Q Clear(g_c), s	2.5	2.2	0.0	3.3	1.5	0.0	4.4	27.0	0.0	2.1	29.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	57	83	71	161	110	94	155	2663	1191	142	2500	1118
V/C Ratio(X)	0.60	0.40	0.00	0.55	0.20	0.00	0.41	0.61	0.00	0.40	0.61	0.00
Avail Cap(c_a), veh/h	95	329	280	211	343	292	163	2663	1191	159	2500	1118
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	62.2	60.5	0.0	60.7	58.3	0.0	56.3	7.3	0.0	60.9	9.9	0.0
Incr Delay (d2), s/veh	9.7	4.3	0.0	2.9	1.2	0.0	0.6	1.0	0.0	0.7	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.3	0.0	1.6	0.8	0.0	2.2	13.4	0.0	1.0	14.5	0.0
LnGrp Delay(d),s/veh	72.0	64.9	0.0	63.6	59.6	0.0	56.9	8.4	0.0	61.6	11.0	0.0
LnGrp LOS	E	E		E	E		E	A		E	B	
Approach Vol, veh/h		67			110			1676			1591	
Approach Delay, s/veh		68.5			62.8			10.2			12.9	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	102.0	7.2	11.7	15.4	96.0	9.1	9.8				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	97.0	6.0	23.0	11.0	91.0	7.0	22.0					
Max Q Clear Time (g_c+I), s	29.0	4.5	3.5	6.4	31.3	5.3	4.2					
Green Ext Time (p_c), s	0.0	32.8	0.0	0.2	4.1	27.7	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			14.2									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	240	0	360	3	0	1	419	1310	1	3	1226	222
Future Volume (veh/h)	240	0	360	3	0	1	419	1310	1	3	1226	222
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	250	0	0	3	0	1	436	1365	0	3	1277	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	0	310	42	0	38	543	2518	1097	6	1987	889
Arrive On Green	0.11	0.00	0.00	0.02	0.00	0.01	0.16	0.71	0.00	0.00	0.56	0.00
Sat Flow, veh/h	3548	0	3167	1774	0	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	250	0	0	3	0	1	436	1365	0	3	1277	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.2	0.0	0.0	0.2	0.0	0.1	13.1	19.4	0.0	0.2	26.5	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	0.2	0.0	0.1	13.1	19.4	0.0	0.2	26.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	0	310	42	0	38	543	2518	1097	6	1987	889
V/C Ratio(X)	0.63	0.00	0.00	0.07	0.00	0.03	0.80	0.54	0.00	0.53	0.64	0.00
Avail Cap(c_a), veh/h	729	0	607	116	0	104	788	2844	1243	66	2183	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.4	0.0	0.0	51.1	0.0	52.0	43.5	7.3	0.0	53.3	16.1	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.7	0.0	0.3	3.9	0.3	0.0	25.7	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	0.1	0.0	0.0	6.5	9.4	0.0	0.1	13.0	0.0
LnGrp Delay(d),s/veh	47.0	0.0	0.0	51.8	0.0	52.3	47.4	7.6	0.0	79.0	16.9	0.0
LnGrp LOS	D			D			D	D	A		E	B
Approach Vol, veh/h		250			4			1801			1280	
Approach Delay, s/veh		47.0			51.9			17.2			17.0	
Approach LOS		D			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	80.1		6.6	20.4	64.1		16.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	84.0			5.0	24.0	64.0		20.0				
Max Q Clear Time (g_c+I), s	21.4			2.2	15.1	28.5		9.2				
Green Ext Time (p_c), s	0.0	46.4		0.0	1.3	29.6		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay				19.4								
HCM 2010 LOS				B								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	412	368	169	409	441	222		
Future Volume (veh/h)	412	368	169	409	441	222		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	429	0	176	426	459	231		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	736	625	245	2182	747	294		
Arrive On Green	0.39	0.00	0.14	0.62	0.22	0.19		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	429	0	176	426	459	231		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	8.7	0.0	4.6	2.5	5.8	6.7		
Cycle Q Clear(g_c), s	8.7	0.0	4.6	2.5	5.8	6.7		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	736	625	245	2182	747	294		
V/C Ratio(X)	0.58	0.00	0.72	0.20	0.61	0.79		
Avail Cap(c_a), veh/h	1086	923	332	3021	788	313		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	11.4	0.0	19.8	4.0	17.0	18.6		
Incr Delay (d2), s/veh	1.6	0.0	2.5	0.1	0.9	10.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.7	0.0	2.4	1.2	2.8	3.7		
LnGrp Delay(d),s/veh	13.0	0.0	22.2	4.1	17.9	29.1		
LnGrp LOS	B		C	A	B	C		
Approach Vol, veh/h	429			602	690			
Approach Delay, s/veh	13.0			9.4	21.6			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.6	23.0				33.6		14.4
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.5					39.5		9.5
Max Q Clear Time (g_c+I), s	10.7					4.5		8.7
Green Ext Time (p_c), s	0.1	6.8				9.6		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			15.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	413	338	305	1285	1260	475		
Future Volume (veh/h)	413	338	305	1285	1260	475		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	421	0	311	1311	1286	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	451	402	338	2442	1669	747		
Arrive On Green	0.25	0.00	0.19	0.69	0.47	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	421	0	311	1311	1286	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	33.3	0.0	24.7	26.2	43.3	0.0		
Cycle Q Clear(g_c), s	33.3	0.0	24.7	26.2	43.3	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	451	402	338	2442	1669	747		
V/C Ratio(X)	0.93	0.00	0.92	0.54	0.77	0.00		
Avail Cap(c_a), veh/h	532	475	408	2442	1669	747		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	52.3	0.0	57.0	10.9	31.4	0.0		
Incr Delay (d2), s/veh	21.8	0.0	23.4	0.9	3.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	19.0	0.0	14.3	13.0	21.9	0.0		
LnGrp Delay(d),s/veh	74.1	0.0	80.4	11.8	34.9	0.0		
LnGrp LOS	E		F	B	C			
Approach Vol, veh/h	421			1622	1286			
Approach Delay, s/veh	74.1			25.0	34.9			
Approach LOS	E			C	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		103.0		40.5	31.3	71.7		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		99.0		43.0	33.0	62.0		
Max Q Clear Time (g_c+l1), s		28.2		35.3	26.7	45.3		
Green Ext Time (p_c), s		25.7		1.2	0.6	12.0		
Intersection Summary								
HCM 2010 Ctrl Delay			35.0					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	111	205	132	1657	1535	118		
Future Volume (veh/h)	111	205	132	1657	1535	118		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	114	0	136	1708	1582	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	139	124	279	3060	2402	1075		
Arrive On Green	0.08	0.00	0.16	0.86	0.68	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	114	0	136	1708	1582	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	8.9	0.0	9.8	17.7	36.3	0.0		
Cycle Q Clear(g_c), s	8.9	0.0	9.8	17.7	36.3	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	139	124	279	3060	2402	1075		
V/C Ratio(X)	0.82	0.00	0.49	0.56	0.66	0.00		
Avail Cap(c_a), veh/h	266	238	279	3060	2402	1075		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	63.5	0.0	53.8	2.5	13.1	0.0		
Incr Delay (d2), s/veh	11.2	0.0	1.3	0.7	1.4	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.8	0.0	4.9	8.6	18.1	0.0		
LnGrp Delay(d),s/veh	74.7	0.0	55.2	3.2	14.5	0.0		
LnGrp LOS	E		E	A	B			
Approach Vol, veh/h	114			1844	1582			
Approach Delay, s/veh	74.7			7.1	14.5			
Approach LOS	E			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		125.0		15.0	26.0	99.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		121.0		21.0	22.0	95.0		
Max Q Clear Time (g_c+l1), s		19.7		10.9	11.8	38.3		
Green Ext Time (p_c), s		15.2		0.2	6.6	11.5		
Intersection Summary								
HCM 2010 Ctrl Delay			12.6					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) Without Project
 Timing Plan: Saturday



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	96	45	726	139	49	729		
Future Volume (veh/h)	96	45	726	139	49	729		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	104	49	789	151	53	792		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	165	147	928	178	75	1374		
Arrive On Green	0.09	0.09	0.61	0.61	0.04	0.74		
Sat Flow, veh/h	1774	1583	1520	291	1774	1863		
Grp Volume(v), veh/h	104	49	0	940	53	792		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1811	1774	1863		
Q Serve(g_s), s	2.7	1.4	0.0	19.8	1.4	9.2		
Cycle Q Clear(g_c), s	2.7	1.4	0.0	19.8	1.4	9.2		
Prop In Lane	1.00	1.00		0.16	1.00			
Lane Grp Cap(c), veh/h	165	147	0	1105	75	1374		
V/C Ratio(X)	0.63	0.33	0.00	0.85	0.70	0.58		
Avail Cap(c_a), veh/h	602	537	0	1268	151	1620		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	20.6	20.0	0.0	7.5	22.3	2.8		
Incr Delay (d2), s/veh	3.9	1.3	0.0	5.1	11.3	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.5	0.6	0.0	11.2	0.9	4.5		
LnGrp Delay(d),s/veh	24.5	21.3	0.0	12.6	33.6	3.2		
LnGrp LOS	C	C		B	C	A		
Approach Vol, veh/h	153		940			845		
Approach Delay, s/veh	23.5		12.6			5.1		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.0	32.8				38.8		8.4
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	33.0					41.0		16.0
Max Q Clear Time (g_c+I), s	21.8					11.2		4.7
Green Ext Time (p_c), s	0.0	6.9				12.0		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			10.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2025) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	52	0	75	0	5	0	50	1765	0	0	1630	63
Future Volume (veh/h)	52	0	75	0	5	0	50	1765	0	0	1630	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	55	0	0	0	5	0	53	1858	0	0	1716	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	0	81	0	95	81	69	3114	1393	1	2899	1297
Arrive On Green	0.05	0.00	0.00	0.00	0.05	0.00	0.04	0.88	0.00	0.00	0.82	0.00
Sat Flow, veh/h	1335	0	1583	0	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	55	0	0	0	5	0	53	1858	0	0	1716	0
Grp Sat Flow(s),veh/h/ln	1335	0	1583	0	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	0.0	0.0	0.0	0.3	0.0	3.9	17.5	0.0	0.0	22.4	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.0	0.3	0.0	3.9	17.5	0.0	0.0	22.4	0.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	0	81	0	95	81	69	3114	1393	1	2899	1297
V/C Ratio(X)	0.45	0.00	0.00	0.00	0.05	0.00	0.77	0.60	0.00	0.00	0.59	0.00
Avail Cap(c_a), veh/h	243	0	216	0	254	216	161	3114	1393	54	2899	1297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	62.1	0.0	0.0	0.0	59.5	0.0	62.8	2.0	0.0	0.0	4.2	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.0	0.2	0.0	16.6	0.9	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.0	0.2	0.0	2.2	8.6	0.0	0.0	11.1	0.0
LnGrp Delay(d),s/veh	64.6	0.0	0.0	0.0	59.7	0.0	79.4	2.9	0.0	0.0	5.1	0.0
LnGrp LOS	E				E		E	A			A	
Approach Vol, veh/h		55			5			1911			1716	
Approach Delay, s/veh		64.6			59.7			5.0			5.1	
Approach LOS		E			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	1.1	120.0		10.7	9.1	112.0		10.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	116.0			18.0	12.0	108.0		18.0				
Max Q Clear Time (g_c+I), s	19.5			7.4	5.9	24.4		2.3				
Green Ext Time (p_c), s	0.0	16.7		0.1	0.0	13.9		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			6.0									
HCM 2010 LOS			A									

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	37	189	22	42	146	57	21	10	42	110	8	17
Future Vol, veh/h	37	189	22	42	146	57	21	10	42	110	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	217	25	48	168	66	24	11	48	126	9	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	243	0	0	626	645	230	642	625	201
Stage 1	-	-	-	-	-	-	315	315	-	297	297	-
Stage 2	-	-	-	-	-	-	311	330	-	345	328	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1335	-	-	1323	-	-	397	391	809	387	401	840
Stage 1	-	-	-	-	-	-	696	656	-	712	668	-
Stage 2	-	-	-	-	-	-	699	646	-	671	647	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1335	-	-	1323	-	-	361	365	809	337	374	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	365	-	337	374	-
Stage 1	-	-	-	-	-	-	674	635	-	689	644	-
Stage 2	-	-	-	-	-	-	649	623	-	600	626	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			1.3			12.4			20		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	361	656	1335	-	-	1323	-	-	337	601		
HCM Lane V/C Ratio	0.067	0.091	0.032	-	-	0.036	-	-	0.375	0.048		
HCM Control Delay (s)	15.7	11	7.8	-	-	7.8	-	-	22	11.3		
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	1.7	0.1		

Intersection												
Int Delay, s/veh	2.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	45	227	14	9	162	10	8	1	9	9	7	70
Future Vol, veh/h	45	227	14	9	162	10	8	1	9	9	7	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	252	16	10	180	11	9	1	10	10	8	78

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	191	0	0	268	0	0	608	571	260	572	574	186
Stage 1	-	-	-	-	-	-	360	360	-	206	206	-
Stage 2	-	-	-	-	-	-	248	211	-	366	368	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1383	-	-	1296	-	-	408	431	779	431	429	856
Stage 1	-	-	-	-	-	-	658	626	-	796	731	-
Stage 2	-	-	-	-	-	-	756	728	-	653	621	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1383	-	-	1296	-	-	353	412	779	410	410	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	412	-	410	410	-
Stage 1	-	-	-	-	-	-	634	603	-	767	725	-
Stage 2	-	-	-	-	-	-	675	722	-	620	599	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	12.6	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	491	1383	-	-	1296	-	-	712
HCM Lane V/C Ratio	0.041	0.036	-	-	0.008	-	-	0.134
HCM Control Delay (s)	12.6	7.7	-	-	7.8	-	-	10.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) Without Project
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	104	101	317	64	219	27	1325	137	211	2028	29
Future Volume (veh/h)	106	104	101	317	64	219	27	1325	137	211	2028	29
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	111	0	337	68	0	29	1410	0	224	2157	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	199	169	260	318	270	95	1817	813	237	2100	939
Arrive On Green	0.08	0.11	0.00	0.15	0.17	0.00	0.05	0.51	0.00	0.13	0.59	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	111	0	337	68	0	29	1410	0	224	2157	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	8.5	0.0	22.0	4.7	0.0	2.4	48.3	0.0	18.8	89.0	0.0
Cycle Q Clear(g_c), s	9.4	8.5	0.0	22.0	4.7	0.0	2.4	48.3	0.0	18.8	89.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	147	199	169	260	318	270	95	1817	813	237	2100	939
V/C Ratio(X)	0.77	0.56	0.00	1.30	0.21	0.00	0.31	0.78	0.00	0.95	1.03	0.00
Avail Cap(c_a), veh/h	201	298	253	260	360	306	130	1817	813	237	2100	939
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.41	0.41	0.00
Uniform Delay (d), s/veh	67.4	63.6	0.0	64.0	53.5	0.0	68.3	29.5	0.0	64.5	30.5	0.0
Incr Delay (d2), s/veh	11.7	2.4	0.0	158.3	0.3	0.0	0.7	3.3	0.0	24.9	20.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	4.5	0.0	22.2	2.5	0.0	1.2	24.3	0.0	10.8	49.1	0.0
LnGrp Delay(d),s/veh	79.1	66.1	0.0	222.3	53.9	0.0	69.0	32.9	0.0	89.3	50.9	0.0
LnGrp LOS	E	E		F	D		E	C		F	F	
Approach Vol, veh/h		224			405			1439			2381	
Approach Delay, s/veh		72.6			194.0			33.6			54.5	
Approach LOS		E			F			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.0	81.0	15.4	29.6	12.0	93.0	25.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	19.0	68.0	16.0	28.0	10.0	77.0	21.0	23.0				
Max Q Clear Time (g_c+I1), s	20.8	50.3	11.4	6.7	4.4	91.0	24.0	10.5				
Green Ext Time (p_c), s	0.0	17.5	0.1	0.6	0.0	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			61.3									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) Without Project
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	46	98	333	59	234	31	1519	105	124	1783	20
Future Volume (veh/h)	84	46	98	333	59	234	31	1519	105	124	1783	20
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	90	49	0	358	63	0	33	1633	0	133	1917	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	91	78	367	162	137	351	2432	1088	197	1935	866
Arrive On Green	0.07	0.05	0.00	0.11	0.09	0.00	0.40	1.00	0.00	0.11	1.00	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	90	49	0	358	63	0	33	1633	0	133	1917	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	7.5	3.9	0.0	15.6	4.8	0.0	1.8	0.0	0.0	5.6	0.0	0.0
Cycle Q Clear(g_c), s	7.5	3.9	0.0	15.6	4.8	0.0	1.8	0.0	0.0	5.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	91	78	367	162	137	351	2432	1088	197	1935	866
V/C Ratio(X)	0.74	0.54	0.00	0.98	0.39	0.00	0.09	0.67	0.00	0.67	0.99	0.00
Avail Cap(c_a), veh/h	177	323	274	367	335	285	351	2432	1088	252	1935	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.59	0.59	0.00	0.61	0.61	0.00
Uniform Delay (d), s/veh	68.5	69.7	0.0	66.8	64.7	0.0	36.9	0.0	0.0	65.1	0.0	0.0
Incr Delay (d2), s/veh	8.7	6.8	0.0	40.2	2.2	0.0	0.0	0.9	0.0	1.5	14.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	2.2	0.0	9.5	2.6	0.0	0.9	0.3	0.0	2.7	3.8	0.0
LnGrp Delay(d),s/veh	77.2	76.5	0.0	107.0	66.9	0.0	36.9	0.9	0.0	66.6	14.0	0.0
LnGrp LOS	E	E		F	E		D	A		E	B	
Approach Vol, veh/h		139			421			1666			2050	
Approach Delay, s/veh		77.0			101.0			1.6			17.4	
Approach LOS		E			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.6	107.1	13.3	17.0	33.6	86.0	19.0	11.4				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	10.0	81.0	14.0	26.0	10.0	81.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	10.0	2.0	9.5	6.8	3.8	2.0	17.6	5.9				
Green Ext Time (p_c), s	0.1	35.6	0.1	0.5	5.5	46.7	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				21.4								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) Without Project
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	237	3	521	8	1	21	625	1317	5	2	1411	165
Future Volume (veh/h)	237	3	521	8	1	21	625	1317	5	2	1411	165
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	0	0	9	1	23	672	1416	0	2	1517	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	0	285	68	3	58	727	2665	1171	4	1925	861
Arrive On Green	0.10	0.00	0.00	0.04	0.04	0.02	0.42	1.00	0.00	0.00	0.54	0.00
Sat Flow, veh/h	3548	0	3167	1774	66	1527	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	257	0	0	9	0	24	672	1416	0	2	1517	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1593	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	10.5	0.0	0.0	0.7	0.0	2.2	27.8	0.0	0.0	0.2	51.3	0.0
Cycle Q Clear(g_c), s	10.5	0.0	0.0	0.7	0.0	2.2	27.8	0.0	0.0	0.2	51.3	0.0
Prop In Lane	1.00		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	354	0	285	68	0	61	727	2665	1171	4	1925	861
V/C Ratio(X)	0.72	0.00	0.00	0.13	0.00	0.39	0.92	0.53	0.00	0.53	0.79	0.00
Avail Cap(c_a), veh/h	449	0	369	83	0	74	803	2665	1171	47	1925	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.00	0.00	1.00	0.00	1.00	0.60	0.60	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	65.5	0.0	0.0	69.7	0.0	71.4	42.2	0.0	0.0	74.8	27.3	0.0
Incr Delay (d2), s/veh	4.0	0.0	0.0	0.9	0.0	4.1	10.5	0.5	0.0	36.5	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	0.0	0.0	0.4	0.0	1.1	14.1	0.2	0.0	0.1	25.8	0.0
LnGrp Delay(d),s/veh	69.5	0.0	0.0	70.6	0.0	75.5	52.7	0.5	0.0	111.3	30.6	0.0
LnGrp LOS	E			E			E	D	A		F	C
Approach Vol, veh/h		257			33			2088			1519	
Approach Delay, s/veh		69.5			74.1			17.3			30.8	
Approach LOS		E			E			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	117.0		9.7	35.7	85.6		19.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	102.0			5.0	34.5	71.0		17.0				
Max Q Clear Time (g_c+I), s	2.0			4.2	29.8	53.3		12.5				
Green Ext Time (p_c), s	0.0	74.3		0.0	1.4	16.6		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			26.4									
HCM 2010 LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) Without Project
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	404	277	93	571	697	284		
Future Volume (veh/h)	404	277	93	571	697	284		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	421	0	97	595	726	296		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	915	777	144	2214	921	392		
Arrive On Green	0.49	0.00	0.03	0.21	0.27	0.25		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	421	0	97	595	726	296		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	11.1	0.0	4.1	10.6	14.7	13.0		
Cycle Q Clear(g_c), s	11.1	0.0	4.1	10.6	14.7	13.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	915	777	144	2214	921	392		
V/C Ratio(X)	0.46	0.00	0.67	0.27	0.79	0.75		
Avail Cap(c_a), veh/h	915	777	213	2214	1101	475		
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.63	0.63	1.00	1.00		
Uniform Delay (d), s/veh	12.6	0.0	35.5	15.3	25.5	26.1		
Incr Delay (d2), s/veh	1.7	0.0	1.3	0.2	2.6	4.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.2	0.0	2.0	5.3	7.3	6.1		
LnGrp Delay(d),s/veh	14.2	0.0	36.8	15.5	28.1	30.3		
LnGrp LOS	B		D	B	C	C		
Approach Vol, veh/h	421			692	1022			
Approach Delay, s/veh	14.2			18.5	28.8			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.1	40.8				50.9		24.1
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	28.5					41.5		22.5
Max Q Clear Time (g_c+I), s	13.1					12.6		16.7
Green Ext Time (p_c), s	0.0	7.9				11.1		1.9
Intersection Summary								
HCM 2010 Ctrl Delay			22.6					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) Without Project
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	283	217	191	1576	2262	434		
Future Volume (veh/h)	283	217	191	1576	2262	434		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	301	0	203	1677	2406	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	287	256	191	2750	2260	1011		
Arrive On Green	0.16	0.00	0.11	0.78	0.64	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	301	0	203	1677	2406	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	21.0	0.0	14.0	26.1	83.0	0.0		
Cycle Q Clear(g_c), s	21.0	0.0	14.0	26.1	83.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	287	256	191	2750	2260	1011		
V/C Ratio(X)	1.05	0.00	1.06	0.61	1.06	0.00		
Avail Cap(c_a), veh/h	287	256	191	2750	2260	1011		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	54.5	0.0	58.0	6.1	23.5	0.0		
Incr Delay (d2), s/veh	67.0	0.0	82.7	1.0	38.9	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	15.6	0.0	11.2	13.0	52.4	0.0		
LnGrp Delay(d),s/veh	121.5	0.0	140.7	7.2	62.4	0.0		
LnGrp LOS	F		F	A	F			
Approach Vol, veh/h	301			1880	2406			
Approach Delay, s/veh	121.5			21.6	62.4			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		25.0	18.0	87.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		101.0		21.0	14.0	83.0		
Max Q Clear Time (g_c+l1), s		28.1		23.0	16.0	85.0		
Green Ext Time (p_c), s		59.9		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			49.6					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) Without Project
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	63	295	120	1568	2412	117		
Future Volume (veh/h)	63	295	120	1568	2412	117		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	66	0	126	1651	2539	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	85	75	130	3182	2828	1265		
Arrive On Green	0.05	0.00	0.07	0.90	0.80	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	66	0	126	1651	2539	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	5.5	0.0	10.6	13.2	76.5	0.0		
Cycle Q Clear(g_c), s	5.5	0.0	10.6	13.2	76.5	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	85	75	130	3182	2828	1265		
V/C Ratio(X)	0.78	0.00	0.97	0.52	0.90	0.00		
Avail Cap(c_a), veh/h	225	201	130	3182	2828	1265		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	70.6	0.0	69.3	1.4	10.7	0.0		
Incr Delay (d2), s/veh	14.3	0.0	69.0	0.6	5.0	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.7	6.5	38.7	0.0		
LnGrp Delay(d),s/veh	84.9	0.0	138.3	2.0	15.8	0.0		
LnGrp LOS	F		F	A	B			
Approach Vol, veh/h	66			1777	2539			
Approach Delay, s/veh	84.9			11.7	15.8			
Approach LOS	F			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		138.8		11.2	15.0	123.8		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		123.0		19.0	11.0	108.0		
Max Q Clear Time (g_c+l1), s		15.2		7.5	12.6	78.5		
Green Ext Time (p_c), s		85.0		0.1	0.0	27.4		
Intersection Summary								
HCM 2010 Ctrl Delay			15.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) Without Project
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	105	47	763	108	40	566		
Future Volume (veh/h)	105	47	763	108	40	566		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	114	51	829	117	43	615		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	170	152	1069	151	61	1435		
Arrive On Green	0.10	0.10	0.67	0.67	0.03	0.77		
Sat Flow, veh/h	1774	1583	1597	225	1774	1863		
Grp Volume(v), veh/h	114	51	0	946	43	615		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1823	1774	1863		
Q Serve(g_s), s	3.7	1.8	0.0	21.3	1.4	6.8		
Cycle Q Clear(g_c), s	3.7	1.8	0.0	21.3	1.4	6.8		
Prop In Lane	1.00	1.00		0.12	1.00			
Lane Grp Cap(c), veh/h	170	152	0	1220	61	1435		
V/C Ratio(X)	0.67	0.34	0.00	0.78	0.71	0.43		
Avail Cap(c_a), veh/h	475	424	0	1220	119	1435		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	26.1	25.2	0.0	6.8	28.6	2.4		
Incr Delay (d2), s/veh	4.5	1.3	0.0	4.9	14.2	0.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.0	0.8	0.0	12.2	0.9	3.8		
LnGrp Delay(d),s/veh	30.6	26.5	0.0	11.7	42.7	3.3		
LnGrp LOS	C	C		B	D	A		
Approach Vol, veh/h	165		946			658		
Approach Delay, s/veh	29.3		11.7			5.9		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.0	44.0				50.0		9.7
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	38.0					46.0		16.0
Max Q Clear Time (g_c+I), s	23.3					8.8		5.7
Green Ext Time (p_c), s	0.0	7.4				10.9		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			11.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET/Kihei HS Access

Future (2032) Without Project
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	26	75	139	155	15	60	47	1597	285	120	2558	59
Future Volume (veh/h)	26	75	139	155	15	60	47	1597	285	120	2558	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	27	82	0	168	16	0	49	1681	0	130	2693	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	240	257	230	18	257	47	1837	822	423	2588	1158
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.00	0.03	0.52	0.00	0.24	0.73	0.00
Sat Flow, veh/h	339	1481	1583	1138	108	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	109	0	0	184	0	0	49	1681	0	130	2693	0
Grp Sat Flow(s),veh/h/ln	1820	0	1583	1246	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	14.1	0.0	0.0	4.0	65.2	0.0	9.0	109.7	0.0
Cycle Q Clear(g_c), s	7.9	0.0	0.0	22.0	0.0	0.0	4.0	65.2	0.0	9.0	109.7	0.0
Prop In Lane	0.25		1.00	0.91		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	0	257	248	0	257	47	1837	822	423	2588	1158
V/C Ratio(X)	0.34	0.00	0.00	0.74	0.00	0.00	1.04	0.91	0.00	0.31	1.04	0.00
Avail Cap(c_a), veh/h	344	0	274	263	0	274	47	2194	982	423	2588	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.9	0.0	0.0	62.5	0.0	0.0	73.0	33.0	0.0	46.9	20.2	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	10.1	0.0	0.0	141.5	8.6	0.0	0.4	29.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	8.2	0.0	0.0	3.8	33.9	0.0	4.5	63.4	0.0
LnGrp Delay(d),s/veh	56.5	0.0	0.0	72.6	0.0	0.0	215.1	41.6	0.0	47.3	49.5	0.0
LnGrp LOS	E			E			F	D		D	F	
Approach Vol, veh/h		109			184			1730			2823	
Approach Delay, s/veh		56.5			72.6			46.5			49.4	
Approach LOS		E			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	39.8	81.9		28.3	8.0	113.7		28.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.0	93.0		26.0	4.0	108.0		26.0				
Max Q Clear Time (g_c+I1), s	19.0	67.2		9.9	6.0	111.7		24.0				
Green Ext Time (p_c), s	7.3	10.6		1.6	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			49.4									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	133	22	37	125	70	22	8	54	176	8	15
Future Vol, veh/h	28	133	22	37	125	70	22	8	54	176	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	140	23	39	132	74	23	8	57	185	8	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	163	0	0	469	494	152	489	468	168
Stage 1	-	-	-	-	-	-	211	211	-	246	246	-
Stage 2	-	-	-	-	-	-	258	283	-	243	222	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1366	-	-	1416	-	-	505	476	894	489	493	876
Stage 1	-	-	-	-	-	-	791	728	-	758	703	-
Stage 2	-	-	-	-	-	-	747	677	-	761	720	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1366	-	-	1416	-	-	471	453	894	435	469	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	471	453	-	435	469	-
Stage 1	-	-	-	-	-	-	774	713	-	742	684	-
Stage 2	-	-	-	-	-	-	705	658	-	689	705	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.2	10.7	18.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	471	794	1366	-	-	1416	-	-	435	673
HCM Lane V/C Ratio	0.049	0.082	0.022	-	-	0.028	-	-	0.426	0.036
HCM Control Delay (s)	13	9.9	7.7	-	-	7.6	-	-	19.3	10.5
HCM Lane LOS	B	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	2.1	0.1

























HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Future (2032) Without Project
 AM Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	150	11	8	150	7	14	0	8	10	0	56
Future Vol, veh/h	43	150	11	8	150	7	14	0	8	10	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	167	12	9	167	8	16	0	9	11	0	62
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	174	0	0	179	0	0	487	460	173	461	462	171
Stage 1	-	-	-	-	-	-	268	268	-	188	188	-
Stage 2	-	-	-	-	-	-	219	192	-	273	274	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1403	-	-	1397	-	-	491	498	871	511	497	873
Stage 1	-	-	-	-	-	-	738	687	-	814	745	-
Stage 2	-	-	-	-	-	-	783	742	-	733	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1403	-	-	1397	-	-	442	478	871	490	477	873
Mov Cap-2 Maneuver	-	-	-	-	-	-	442	478	-	490	477	-
Stage 1	-	-	-	-	-	-	713	663	-	786	740	-
Stage 2	-	-	-	-	-	-	723	737	-	701	660	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.6			0.4			12			10.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	538	1403	-	-	1397	-	-	781				
HCM Lane V/C Ratio	0.045	0.034	-	-	0.006	-	-	0.094				
HCM Control Delay (s)	12	7.7	-	-	7.6	-	-	10.1				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3				

HCM 2010 Signalized Intersection Summary
1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) Without Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	91	76	235	71	213	59	2178	216	183	2072	85
Future Volume (veh/h)	75	91	76	235	71	213	59	2178	216	183	2072	85
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	77	94	0	242	73	0	61	2245	0	189	2136	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	116	98	237	263	224	79	2284	1022	184	2493	1115
Arrive On Green	0.05	0.06	0.00	0.13	0.14	0.00	0.04	0.65	0.00	0.14	0.94	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	77	94	0	242	73	0	61	2245	0	189	2136	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	11.6	13.5	0.0	36.0	9.5	0.0	9.2	166.1	0.0	28.0	52.3	0.0
Cycle Q Clear(g_c), s	11.6	13.5	0.0	36.0	9.5	0.0	9.2	166.1	0.0	28.0	52.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	116	98	237	263	224	79	2284	1022	184	2493	1115
V/C Ratio(X)	0.80	0.81	0.00	1.02	0.28	0.00	0.77	0.98	0.00	1.03	0.86	0.00
Avail Cap(c_a), veh/h	131	166	141	237	276	235	85	2284	1022	184	2493	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.49	0.49	0.00
Uniform Delay (d), s/veh	126.2	125.1	0.0	117.0	103.6	0.0	127.6	46.5	0.0	116.4	4.2	0.0
Incr Delay (d2), s/veh	21.4	17.9	0.0	64.6	0.6	0.0	28.2	15.2	0.0	53.5	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	7.5	0.0	21.9	4.9	0.0	5.1	85.9	0.0	16.5	24.8	0.0
LnGrp Delay(d),s/veh	147.6	142.9	0.0	181.7	104.2	0.0	155.7	61.7	0.0	170.1	6.2	0.0
LnGrp LOS	F	F		F	F		F	E		F	A	
Approach Vol, veh/h		171			315			2306			2325	
Approach Delay, s/veh		145.0			163.8			64.2			19.5	
Approach LOS		F			F			E			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.0	178.2	17.6	42.1	16.1	194.2	39.0	20.8				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	27.0	166.0	19.0	39.0	12.0	181.0	35.0	23.0				
Max Q Clear Time (g_c+I1), s	30.0	168.1	13.6	11.5	11.2	54.3	38.0	15.5				
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.0	125.2	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			52.7									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	80	52	227	51	141	49	2119	214	288	2079	65
Future Volume (veh/h)	31	80	52	227	51	141	49	2119	214	288	2079	65
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	32	82	0	234	53	0	51	2185	0	297	2143	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	103	88	273	201	171	162	2539	1136	331	2556	1144
Arrive On Green	0.03	0.06	0.00	0.08	0.11	0.00	0.18	1.00	0.00	0.19	1.00	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	32	82	0	234	53	0	51	2185	0	297	2143	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	4.8	11.7	0.0	18.1	7.1	0.0	6.7	0.0	0.0	22.7	0.0	0.0
Cycle Q Clear(g_c), s	4.8	11.7	0.0	18.1	7.1	0.0	6.7	0.0	0.0	22.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	47	103	88	273	201	171	162	2539	1136	331	2556	1144
V/C Ratio(X)	0.67	0.80	0.00	0.86	0.26	0.00	0.31	0.86	0.00	0.90	0.84	0.00
Avail Cap(c_a), veh/h	66	159	135	293	248	211	162	2539	1136	370	2556	1144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.19	0.19	0.00	0.42	0.42	0.00
Uniform Delay (d), s/veh	30.2	126.0	0.0	122.8	110.6	0.0	103.0	0.0	0.0	107.7	0.0	0.0
Incr Delay (d2), s/veh	15.4	18.8	0.0	20.6	1.0	0.0	0.1	0.8	0.0	10.3	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.6	0.0	9.4	3.7	0.0	3.3	0.3	0.0	11.3	0.5	0.0
LnGrp Delay(d),s/veh	145.6	144.8	0.0	143.4	111.6	0.0	103.1	0.8	0.0	118.0	1.5	0.0
LnGrp LOS	F	F		F	F		F	A		F	A	
Approach Vol, veh/h		114			287			2236			2440	
Approach Delay, s/veh		145.0			137.6			3.1			15.7	
Approach LOS		F			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	197.7	10.2	32.1	28.7	199.0	24.4	17.9				
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	20.0	180.0	9.0	35.0	14.0	194.0	22.0	22.0				
Max Q Clear Time (g_c+24), s	24.7	2.0	6.8	9.1	8.7	2.0	20.1	13.7				
Green Ext Time (p_c), s	0.2	96.3	0.0	1.4	2.6	91.3	0.3	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				19.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	234	2	592	27	17	41	602	1718	18	5	1840	286
Future Volume (veh/h)	234	2	592	27	17	41	602	1718	18	5	1840	286
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	247	0	0	28	18	43	634	1808	0	5	1937	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	0	253	46	13	30	666	2919	1294	8	2251	1007
Arrive On Green	0.09	0.00	0.00	0.03	0.03	0.02	0.39	1.00	0.00	0.00	0.64	0.00
Sat Flow, veh/h	3548	0	3167	1774	489	1168	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	247	0	0	28	0	61	634	1808	0	5	1937	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1657	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	18.5	0.0	0.0	4.2	0.0	7.0	48.3	0.0	0.0	0.8	118.9	0.0
Cycle Q Clear(g_c), s	18.5	0.0	0.0	4.2	0.0	7.0	48.3	0.0	0.0	0.8	118.9	0.0
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	253	46	0	43	666	2919	1294	8	2251	1007
V/C Ratio(X)	0.81	0.00	0.00	0.61	0.00	1.42	0.95	0.62	0.00	0.61	0.86	0.00
Avail Cap(c_a), veh/h	394	0	334	46	0	43	714	2919	1294	26	2251	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.00	1.00	0.00	1.00	0.40	0.40	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.3	0.0	0.0	130.1	0.0	132.2	81.6	0.0	0.0	134.1	39.5	0.0
Incr Delay (d2), s/veh	8.9	0.0	0.0	21.0	0.0	283.6	11.5	0.4	0.0	24.0	4.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.5	0.0	0.0	2.3	0.0	6.6	24.0	0.2	0.0	0.4	59.5	0.0
LnGrp Delay(d),s/veh	130.2	0.0	0.0	151.2	0.0	415.8	93.1	0.4	0.0	158.2	44.1	0.0
LnGrp LOS	F			F		F	F	A		F	D	
Approach Vol, veh/h		247			89			2442			1942	
Approach Delay, s/veh		130.2			332.5			24.5			44.4	
Approach LOS		F			F			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3	226.7		11.0	56.2	175.7		27.1				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	211.0			5.0	55.5	159.0		28.0				
Max Q Clear Time (g_c+I), s	2.0			9.0	50.3	120.9		20.5				
Green Ext Time (p_c), s	0.0	179.2		0.0	1.4	37.0		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) Without Project
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	541	498	190	550	509	271		
Future Volume (veh/h)	541	498	190	550	509	271		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	558	0	196	567	525	279		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1080	918	219	2594	715	312		
Arrive On Green	0.58	0.00	0.25	1.00	0.21	0.20		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	558	0	196	567	525	279		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	24.3	0.0	14.4	0.0	19.2	23.2		
Cycle Q Clear(g_c), s	24.3	0.0	14.4	0.0	19.2	23.2		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1080	918	219	2594	715	312		
V/C Ratio(X)	0.52	0.00	0.89	0.22	0.73	0.90		
Avail Cap(c_a), veh/h	1080	918	342	2594	816	358		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.62	0.62	1.00	1.00		
Uniform Delay (d), s/veh	17.0	0.0	49.9	0.0	50.0	52.9		
Incr Delay (d2), s/veh	1.8	0.0	7.9	0.1	2.3	20.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	12.9	0.0	7.5	0.0	9.4	11.9		
LnGrp Delay(d),s/veh	18.8	0.0	57.9	0.1	52.3	73.4		
LnGrp LOS	B		E	A	D	E		
Approach Vol, veh/h	558			763	804			
Approach Delay, s/veh	18.8			15.0	59.6			
Approach LOS	B			B	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	30.7	82.2				102.9		32.1
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	20.0	63.5				93.5		30.5
Max Q Clear Time (g_c+I), s	10.4	26.3				2.0		25.2
Green Ext Time (p_c), s	0.3	14.0				16.8		1.4
Intersection Summary								
HCM 2010 Ctrl Delay			32.9					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) Without Project
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	397	387	303	2228	1972	453		
Future Volume (veh/h)	397	387	303	2228	1972	453		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	401	0	306	2251	1992	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	370	330	281	2566	1888	844		
Arrive On Green	0.21	0.00	0.16	0.73	0.53	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	401	0	306	2251	1992	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	25.0	0.0	19.0	57.7	64.0	0.0		
Cycle Q Clear(g_c), s	25.0	0.0	19.0	57.7	64.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	370	330	281	2566	1888	844		
V/C Ratio(X)	1.08	0.00	1.09	0.88	1.06	0.00		
Avail Cap(c_a), veh/h	370	330	281	2566	1888	844		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	47.5	0.0	50.5	12.5	28.0	0.0		
Incr Delay (d2), s/veh	71.5	0.0	79.7	4.6	37.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	19.6	0.0	15.5	29.2	40.7	0.0		
LnGrp Delay(d),s/veh	119.0	0.0	130.2	17.1	65.1	0.0		
LnGrp LOS	F		F	B	F			
Approach Vol, veh/h	401			2557	1992			
Approach Delay, s/veh	119.0			30.6	65.1			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		91.0		29.0	23.0	68.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		87.0		25.0	19.0	64.0		
Max Q Clear Time (g_c+l1), s		59.7		27.0	21.0	66.0		
Green Ext Time (p_c), s		25.6		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			51.7					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) Without Project
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	102	216	151	2429	2300	131		
Future Volume (veh/h)	102	216	151	2429	2300	131		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	106	0	157	2530	2396	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	119	107	262	3196	2622	1173		
Arrive On Green	0.07	0.00	0.15	0.90	0.74	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	106	0	157	2530	2396	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	16.0	0.0	22.3	65.6	146.7	0.0		
Cycle Q Clear(g_c), s	16.0	0.0	22.3	65.6	146.7	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	119	107	262	3196	2622	1173		
V/C Ratio(X)	0.89	0.00	0.60	0.79	0.91	0.00		
Avail Cap(c_a), veh/h	171	152	262	3196	2622	1173		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	24.9	0.0	107.6	4.5	28.1	0.0		
Incr Delay (d2), s/veh	30.1	0.0	3.8	2.1	6.3	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.9	0.0	11.3	32.2	73.5	0.0		
LnGrp Delay(d),s/veh	155.0	0.0	111.4	6.5	34.4	0.0		
LnGrp LOS	F		F	A	C			
Approach Vol, veh/h	106			2687	2396			
Approach Delay, s/veh	155.0			12.7	34.4			
Approach LOS	F			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		247.8		22.2	43.8	204.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		236.0		26.0	32.0	200.0		
Max Q Clear Time (g_c+l1), s		67.6		18.0	24.3	148.7		
Green Ext Time (p_c), s		47.4		0.2	6.8	26.5		
Intersection Summary								
HCM 2010 Ctrl Delay			25.6					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) Without Project
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	84	52	912	172	55	958		
Future Volume (veh/h)	84	52	912	172	55	958		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	85	53	921	174	56	968		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	134	119	1076	203	70	1500		
Arrive On Green	0.08	0.08	0.71	0.71	0.04	0.81		
Sat Flow, veh/h	1774	1583	1524	288	1774	1863		
Grp Volume(v), veh/h	85	53	0	1095	56	968		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1812	1774	1863		
Q Serve(g_s), s	3.1	2.1	0.0	30.1	2.1	14.1		
Cycle Q Clear(g_c), s	3.1	2.1	0.0	30.1	2.1	14.1		
Prop In Lane	1.00	1.00		0.16	1.00			
Lane Grp Cap(c), veh/h	134	119	0	1279	70	1500		
V/C Ratio(X)	0.64	0.44	0.00	0.86	0.80	0.65		
Avail Cap(c_a), veh/h	424	379	0	1571	106	1838		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	30.0	29.6	0.0	7.3	31.8	2.6		
Incr Delay (d2), s/veh	5.0	2.6	0.0	4.1	21.2	0.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.7	1.0	0.0	16.1	1.4	7.2		
LnGrp Delay(d),s/veh	35.0	32.2	0.0	11.5	53.1	3.2		
LnGrp LOS	C	C		B	D	A		
Approach Vol, veh/h	138		1095			1024		
Approach Delay, s/veh	33.9		11.5			5.9		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.6	51.2				57.8		9.0
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	58.0					66.0		16.0
Max Q Clear Time (g_c+1), s	32.1					16.1		5.1
Green Ext Time (p_c), s	0.0	15.1				20.7		0.3
Intersection Summary								
HCM 2010 Ctrl Delay			10.3					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2032) Without Project
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	37	15	107	80	15	30	64	2525	65	25	2415	70
Future Volume (veh/h)	37	15	107	80	15	30	64	2525	65	25	2415	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	16	0	87	16	0	65	2577	0	27	2464	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.92	0.98	0.92	0.92	0.92	0.98	0.98	0.92	0.92	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	43	127	123	18	127	77	2678	1198	211	2944	1317
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.00	0.04	0.76	0.00	0.12	0.83	0.00
Sat Flow, veh/h	1103	537	1583	1225	225	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	54	0	0	103	0	0	65	2577	0	27	2464	0
Grp Sat Flow(s),veh/h/ln	1640	0	1583	1450	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	10.7	0.0	0.0	9.8	176.0	0.0	3.7	104.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0	19.0	0.0	0.0	9.8	176.0	0.0	3.7	104.0	0.0
Prop In Lane	0.70		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	154	0	127	141	0	127	77	2678	1198	211	2944	1317
V/C Ratio(X)	0.35	0.00	0.00	0.73	0.00	0.00	0.84	0.96	0.00	0.13	0.84	0.00
Avail Cap(c_a), veh/h	217	0	194	202	0	194	105	2858	1278	211	2944	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	123.0	0.0	0.0	128.2	29.4	0.0	106.4	12.5	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	7.7	0.0	0.0	33.5	10.6	0.0	0.3	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	7.9	0.0	0.0	5.6	89.5	0.0	1.8	51.5	0.0
LnGrp Delay(d),s/veh	119.4	0.0	0.0	130.7	0.0	0.0	161.7	40.0	0.0	106.7	15.6	0.0
LnGrp LOS	F			F			F	D		F	B	
Approach Vol, veh/h		54			103			2642			2491	
Approach Delay, s/veh		119.4			130.7			43.0			16.5	
Approach LOS		F			F			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.1	208.3		25.6	15.8	228.6		25.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	218.0			33.0	16.0	209.0		33.0				
Max Q Clear Time (g_c+I), s	178.0			10.3	11.8	106.0		21.0				
Green Ext Time (p_c), s	1.2	26.3		0.8	0.0	36.7		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			33.0									
HCM 2010 LOS			C									

Intersection													
Int Delay, s/veh	6.1												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	48	168	31	63	149	125	20	8	44	105	12	18
Future Vol, veh/h	48	168	31	63	149	125	20	8	44	105	12	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	187	34	70	166	139	22	9	49	117	13	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	304	0	0	221	0	0	703	755	204	714	703	235
Stage 1	-	-	-	-	-	-	311	311	-	375	375	-
Stage 2	-	-	-	-	-	-	392	444	-	339	328	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1257	-	-	1348	-	-	352	338	837	346	362	804
Stage 1	-	-	-	-	-	-	699	658	-	646	617	-
Stage 2	-	-	-	-	-	-	633	575	-	676	647	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1257	-	-	1348	-	-	309	307	837	296	329	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	307	-	296	329	-
Stage 1	-	-	-	-	-	-	670	630	-	619	585	-
Stage 2	-	-	-	-	-	-	572	545	-	601	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	1.5	12.8	22.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	309	661	1257	-	-	1348	-	-	296	510
HCM Lane V/C Ratio	0.072	0.087	0.042	-	-	0.052	-	-	0.394	0.065
HCM Control Delay (s)	17.6	11	8	-	-	7.8	-	-	24.9	12.6
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.2	-	-	1.8	0.2

Intersection												
Int Delay, s/veh	2.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	79	233	14	9	169	9	5	0	6	9	0	51
Future Vol, veh/h	79	233	14	9	169	9	5	0	6	9	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	259	16	10	188	10	6	0	7	10	0	57

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	198	0	0	274	0	0	683	660	267	659	663	193
Stage 1	-	-	-	-	-	-	442	442	-	213	213	-
Stage 2	-	-	-	-	-	-	241	218	-	446	450	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1375	-	-	1289	-	-	363	383	772	377	382	849
Stage 1	-	-	-	-	-	-	594	576	-	789	726	-
Stage 2	-	-	-	-	-	-	762	723	-	591	572	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1375	-	-	1289	-	-	320	356	772	353	355	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	320	356	-	353	355	-
Stage 1	-	-	-	-	-	-	556	539	-	739	720	-
Stage 2	-	-	-	-	-	-	706	717	-	548	535	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.4	12.9	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	470	1375	-	-	1289	-	-	701
HCM Lane V/C Ratio	0.026	0.064	-	-	0.008	-	-	0.095
HCM Control Delay (s)	12.9	7.8	-	-	7.8	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.3

HCM 2010 Signalized Intersection Summary
1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) Without Project
Timing Plan: Saturday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	92	60	285	90	236	56	1666	238	271	1532	60
Future Volume (veh/h)	66	92	60	285	90	236	56	1666	238	271	1532	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	95	0	294	93	0	58	1718	0	279	1579	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	218	185	272	399	339	128	1679	751	259	1940	868
Arrive On Green	0.06	0.12	0.00	0.15	0.21	0.00	0.07	0.47	0.00	0.15	0.55	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	68	95	0	294	93	0	58	1718	0	279	1579	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.2	6.5	0.0	21.0	5.7	0.0	4.3	65.0	0.0	20.0	49.9	0.0
Cycle Q Clear(g_c), s	5.2	6.5	0.0	21.0	5.7	0.0	4.3	65.0	0.0	20.0	49.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	99	218	185	272	399	339	128	1679	751	259	1940	868
V/C Ratio(X)	0.69	0.44	0.00	1.08	0.23	0.00	0.45	1.02	0.00	1.08	0.81	0.00
Avail Cap(c_a), veh/h	155	326	277	272	449	381	142	1679	751	259	1940	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	63.5	56.3	0.0	58.0	44.5	0.0	61.0	36.0	0.0	58.5	25.2	0.0
Incr Delay (d2), s/veh	8.1	1.4	0.0	77.9	0.3	0.0	0.9	28.0	0.0	78.0	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.4	0.0	16.2	3.0	0.0	2.1	38.3	0.0	15.4	25.0	0.0
LnGrp Delay(d),s/veh	71.6	57.7	0.0	135.9	44.8	0.0	61.9	64.0	0.0	136.5	28.4	0.0
LnGrp LOS	E	E		F	D		E	F		F	C	
Approach Vol, veh/h		163			387			1776			1858	
Approach Delay, s/veh		63.5			114.0			63.9			44.6	
Approach LOS		E			F			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.0	69.0	10.7	33.3	13.9	79.1	24.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	19.0	64.0	11.0	32.0	10.0	73.0	20.0	23.0				
Max Q Clear Time (g_c+I1), s	22.0	67.0	7.2	7.7	6.3	51.9	23.0	8.5				
Green Ext Time (p_c), s	0.0	0.0	0.1	0.7	0.0	20.7	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			60.0									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	32	71	86	22	137	62	1756	157	56	1737	28
Future Volume (veh/h)	33	32	71	86	22	137	62	1756	157	56	1737	28
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	34	33	0	88	22	0	63	1792	0	57	1772	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	136	116	211	172	146	111	2081	931	214	2081	931
Arrive On Green	0.04	0.07	0.00	0.06	0.09	0.00	0.06	0.59	0.00	0.06	0.59	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	34	33	0	88	22	0	63	1792	0	57	1772	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	1.3	1.2	0.0	1.7	0.8	0.0	2.4	29.5	0.0	1.1	28.8	0.0
Cycle Q Clear(g_c), s	1.3	1.2	0.0	1.7	0.8	0.0	2.4	29.5	0.0	1.1	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	75	136	116	211	172	146	111	2081	931	214	2081	931
V/C Ratio(X)	0.46	0.24	0.00	0.42	0.13	0.00	0.57	0.86	0.00	0.27	0.85	0.00
Avail Cap(c_a), veh/h	153	614	522	247	588	500	153	2081	931	296	2081	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.6	30.5	0.0	31.5	29.1	0.0	31.8	12.0	0.0	31.2	11.9	0.0
Incr Delay (d2), s/veh	4.3	1.3	0.0	1.3	0.5	0.0	1.7	5.0	0.0	0.2	4.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.6	0.0	0.9	0.4	0.0	1.2	15.6	0.0	0.5	15.1	0.0
LnGrp Delay(d),s/veh	36.9	31.8	0.0	32.8	29.5	0.0	33.5	16.9	0.0	31.4	16.5	0.0
LnGrp LOS	D	C		C	C		C	B		C	B	
Approach Vol, veh/h		67			110			1855			1829	
Approach Delay, s/veh		34.4			32.2			17.5			17.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.3	45.0	5.9	10.5	8.3	45.0	7.3	9.1				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	40.0	5.0	21.0	5.0	40.0	4.0	22.0					
Max Q Clear Time (g_c+I), s	31.5	3.3	2.8	4.4	30.8	3.7	3.2					
Green Ext Time (p_c), s	0.0	7.6	0.0	0.2	0.4	8.0	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				18.0								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	262	0	427	3	0	1	485	1484	1	3	1399	242
Future Volume (veh/h)	262	0	427	3	0	1	485	1484	1	3	1399	242
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	273	0	0	3	0	1	505	1546	0	3	1457	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	0	322	58	0	51	670	2211	946	6	1558	697
Arrive On Green	0.12	0.00	0.00	0.03	0.00	0.01	0.19	0.62	0.00	0.00	0.44	0.00
Sat Flow, veh/h	3548	0	3167	1774	0	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	273	0	0	3	0	1	505	1546	0	3	1457	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.4	0.0	0.0	0.1	0.0	0.0	10.2	21.4	0.0	0.1	28.8	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.1	0.0	0.0	10.2	21.4	0.0	0.1	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	434	0	322	58	0	51	670	2211	946	6	1558	697
V/C Ratio(X)	0.63	0.00	0.00	0.05	0.00	0.02	0.75	0.70	0.00	0.52	0.94	0.00
Avail Cap(c_a), veh/h	434	0	322	169	0	150	1051	2355	1010	96	1558	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.7	0.0	0.0	34.5	0.0	35.5	28.0	9.2	0.0	36.6	19.6	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.4	0.0	0.1	1.8	1.1	0.0	24.8	11.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	0.1	0.0	0.0	5.0	10.6	0.0	0.1	16.4	0.0
LnGrp Delay(d),s/veh	33.6	0.0	0.0	34.9	0.0	35.6	29.7	10.3	0.0	61.4	30.7	0.0
LnGrp LOS	C			C			D	C	B		E	C
Approach Vol, veh/h		273			4			2051			1460	
Approach Delay, s/veh		33.6			35.1			15.1			30.8	
Approach LOS		C			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	50.0		6.4	17.8	36.4		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	47.0			5.0	22.0	29.0		7.0				
Max Q Clear Time (g_c+I), s	23.4			2.1	12.2	30.8		7.4				
Green Ext Time (p_c), s	0.0	20.6		0.0	1.6	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				22.5								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) Without Project
 Timing Plan: Saturday



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	447	378	169	444	513	255		
Future Volume (veh/h)	447	378	169	444	513	255		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	466	0	176	462	534	266		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	739	628	241	2162	801	322		
Arrive On Green	0.40	0.00	0.14	0.61	0.23	0.20		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	466	0	176	462	534	266		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	10.3	0.0	4.9	3.0	7.2	8.2		
Cycle Q Clear(g_c), s	10.3	0.0	4.9	3.0	7.2	8.2		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	739	628	241	2162	801	322		
V/C Ratio(X)	0.63	0.00	0.73	0.21	0.67	0.83		
Avail Cap(c_a), veh/h	976	830	312	2755	821	331		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.4	0.0	21.2	4.5	17.8	19.5		
Incr Delay (d2), s/veh	1.9	0.0	3.9	0.1	1.6	14.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.6	0.0	2.6	1.4	3.6	4.9		
LnGrp Delay(d),s/veh	14.3	0.0	25.1	4.6	19.4	33.8		
LnGrp LOS	B		C	A	B	C		
Approach Vol, veh/h	466			638	800			
Approach Delay, s/veh	14.3			10.2	24.2			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.9	24.3				35.2		15.9
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	25.3					38.3		10.7
Max Q Clear Time (g_c+I), s	12.3					5.0		10.2
Green Ext Time (p_c), s	0.1	6.5				10.5		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			17.1					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) Without Project
Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	413	338	305	1503	1469	475		
Future Volume (veh/h)	413	338	305	1503	1469	475		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	421	0	311	1534	1499	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	402	359	308	2359	1557	697		
Arrive On Green	0.23	0.00	0.17	0.67	0.44	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	421	0	311	1534	1499	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	17.0	0.0	13.0	19.1	30.9	0.0		
Cycle Q Clear(g_c), s	17.0	0.0	13.0	19.1	30.9	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	402	359	308	2359	1557	697		
V/C Ratio(X)	1.05	0.00	1.01	0.65	0.96	0.00		
Avail Cap(c_a), veh/h	402	359	308	2359	1557	697		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	29.0	0.0	31.0	7.4	20.4	0.0		
Incr Delay (d2), s/veh	57.7	0.0	54.2	1.4	15.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.1	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	14.7	0.0	11.0	9.6	18.3	0.0		
LnGrp Delay(d),s/veh	86.7	0.0	85.3	8.8	35.9	0.0		
LnGrp LOS	F		F	A	D			
Approach Vol, veh/h	421			1845	1499			
Approach Delay, s/veh	86.7			21.7	35.9			
Approach LOS	F			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		54.0		21.0	17.0	37.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		50.0		17.0	13.0	33.0		
Max Q Clear Time (g_c+l1), s		21.1		19.0	15.0	32.9		
Green Ext Time (p_c), s		20.9		0.0	0.0	0.1		
Intersection Summary								
HCM 2010 Ctrl Delay			34.6					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) Without Project
 Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	111	205	132	1897	1764	118		
Future Volume (veh/h)	111	205	132	1897	1764	118		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	114	0	136	1956	1819	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	141	126	347	3022	2212	990		
Arrive On Green	0.08	0.00	0.20	0.85	0.63	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	114	0	136	1956	1819	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	7.6	0.0	8.0	21.7	47.6	0.0		
Cycle Q Clear(g_c), s	7.6	0.0	8.0	21.7	47.6	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	141	126	347	3022	2212	990		
V/C Ratio(X)	0.81	0.00	0.39	0.65	0.82	0.00		
Avail Cap(c_a), veh/h	237	211	347	3022	2212	990		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	54.3	0.0	42.1	2.9	17.4	0.0		
Incr Delay (d2), s/veh	10.4	0.0	0.7	1.1	3.6	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.1	0.0	4.0	10.8	24.1	0.0		
LnGrp Delay(d),s/veh	64.7	0.0	42.8	4.0	21.0	0.0		
LnGrp LOS	E		D	A	C			
Approach Vol, veh/h	114			2092	1819			
Approach Delay, s/veh	64.7			6.5	21.0			
Approach LOS	E			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		106.5		13.5	27.5	79.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		96.0		16.0	17.0	75.0		
Max Q Clear Time (g_c+l1), s		23.7		9.6	10.0	49.6		
Green Ext Time (p_c), s		20.1		0.2	5.4	11.9		
Intersection Summary								
HCM 2010 Ctrl Delay			14.7					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) Without Project
 Timing Plan: Saturday



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	96	45	832	139	49	839		
Future Volume (veh/h)	96	45	832	139	49	839		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	104	49	904	151	53	912		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	161	143	1011	169	72	1421		
Arrive On Green	0.09	0.09	0.65	0.65	0.04	0.76		
Sat Flow, veh/h	1774	1583	1557	260	1774	1863		
Grp Volume(v), veh/h	104	49	0	1055	53	912		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1817	1774	1863		
Q Serve(g_s), s	3.1	1.6	0.0	26.5	1.6	12.4		
Cycle Q Clear(g_c), s	3.1	1.6	0.0	26.5	1.6	12.4		
Prop In Lane	1.00	1.00		0.14	1.00			
Lane Grp Cap(c), veh/h	161	143	0	1180	72	1421		
V/C Ratio(X)	0.65	0.34	0.00	0.89	0.74	0.64		
Avail Cap(c_a), veh/h	520	464	0	1264	130	1569		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	24.0	23.3	0.0	8.0	25.9	3.0		
Incr Delay (d2), s/veh	4.3	1.4	0.0	8.2	13.7	0.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.7	0.7	0.0	15.6	1.1	6.4		
LnGrp Delay(d),s/veh	28.3	24.7	0.0	16.2	39.6	3.8		
LnGrp LOS	C	C		B	D	A		
Approach Vol, veh/h	153		1055			965		
Approach Delay, s/veh	27.2		16.2			5.7		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.2	39.5				45.7		8.9
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	38.0					46.0		16.0
Max Q Clear Time (g_c+I), s	28.5					14.4		5.1
Green Ext Time (p_c), s	0.0	6.9				15.5		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			12.3					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2032) Without Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	52	0	75	0	10	0	50	2010	0	0	1858	63
Future Volume (veh/h)	52	0	75	0	10	0	50	2010	0	0	1858	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	55	0	0	0	11	0	53	2116	0	0	1956	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	0	88	0	103	88	68	3107	1390	1	2853	1276
Arrive On Green	0.06	0.00	0.00	0.00	0.06	0.00	0.04	0.88	0.00	0.00	0.81	0.00
Sat Flow, veh/h	1256	0	1583	0	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	55	0	0	0	11	0	53	2116	0	0	1956	0
Grp Sat Flow(s),veh/h/ln	1256	0	1583	0	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.7	0.0	0.0	0.0	0.7	0.0	3.6	21.8	0.0	0.0	28.8	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	0.0	0.7	0.0	3.6	21.8	0.0	0.0	28.8	0.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	0	88	0	103	88	68	3107	1390	1	2853	1276
V/C Ratio(X)	0.42	0.00	0.00	0.00	0.11	0.00	0.77	0.68	0.00	0.00	0.69	0.00
Avail Cap(c_a), veh/h	239	0	211	0	248	211	133	3107	1390	59	2853	1276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	56.4	0.0	0.0	0.0	53.8	0.0	57.2	2.2	0.0	0.0	5.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.0	0.4	0.0	16.8	1.2	0.0	0.0	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.0	0.4	0.0	2.1	10.8	0.0	0.0	14.1	0.0
LnGrp Delay(d),s/veh	58.6	0.0	0.0	0.0	54.3	0.0	74.0	3.5	0.0	0.0	6.4	0.0
LnGrp LOS	E				D		E	A			A	
Approach Vol, veh/h		55			11			2169			1956	
Approach Delay, s/veh		58.6			54.3			5.2			6.4	
Approach LOS		E			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0	109.3		10.7	8.6	100.7		10.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s		88.0		16.0	9.0	83.0		16.0				
Max Q Clear Time (g_c+I), s		23.8		7.3	5.6	30.8		2.7				
Green Ext Time (p_c), s	0.0	53.3		0.1	0.0	44.8		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay					6.6							
HCM 2010 LOS					A							

Intersection

Int Delay, s/veh 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	37	189	22	42	146	57	21	10	42	110	8	17
Future Vol, veh/h	37	189	22	42	146	57	21	10	42	110	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	217	25	48	168	66	24	11	48	126	9	20

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	233	0	0	243	0	0	626	645	230	642	625	201
Stage 1	-	-	-	-	-	-	315	315	-	297	297	-
Stage 2	-	-	-	-	-	-	311	330	-	345	328	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1335	-	-	1323	-	-	397	391	809	387	401	840
Stage 1	-	-	-	-	-	-	696	656	-	712	668	-
Stage 2	-	-	-	-	-	-	699	646	-	671	647	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1335	-	-	1323	-	-	361	365	809	337	374	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	365	-	337	374	-
Stage 1	-	-	-	-	-	-	674	635	-	689	644	-
Stage 2	-	-	-	-	-	-	649	623	-	600	626	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.3	12.4	20
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	361	656	1335	-	-	1323	-	-	337	601
HCM Lane V/C Ratio	0.067	0.091	0.032	-	-	0.036	-	-	0.375	0.048
HCM Control Delay (s)	15.7	11	7.8	-	-	7.8	-	-	22	11.3
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	1.7	0.1

Intersection												
Int Delay, s/veh	2.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	45	232	14	9	162	10	8	1	9	9	7	70
Future Vol, veh/h	45	232	14	9	162	10	8	1	9	9	7	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	258	16	10	180	11	9	1	10	10	8	78

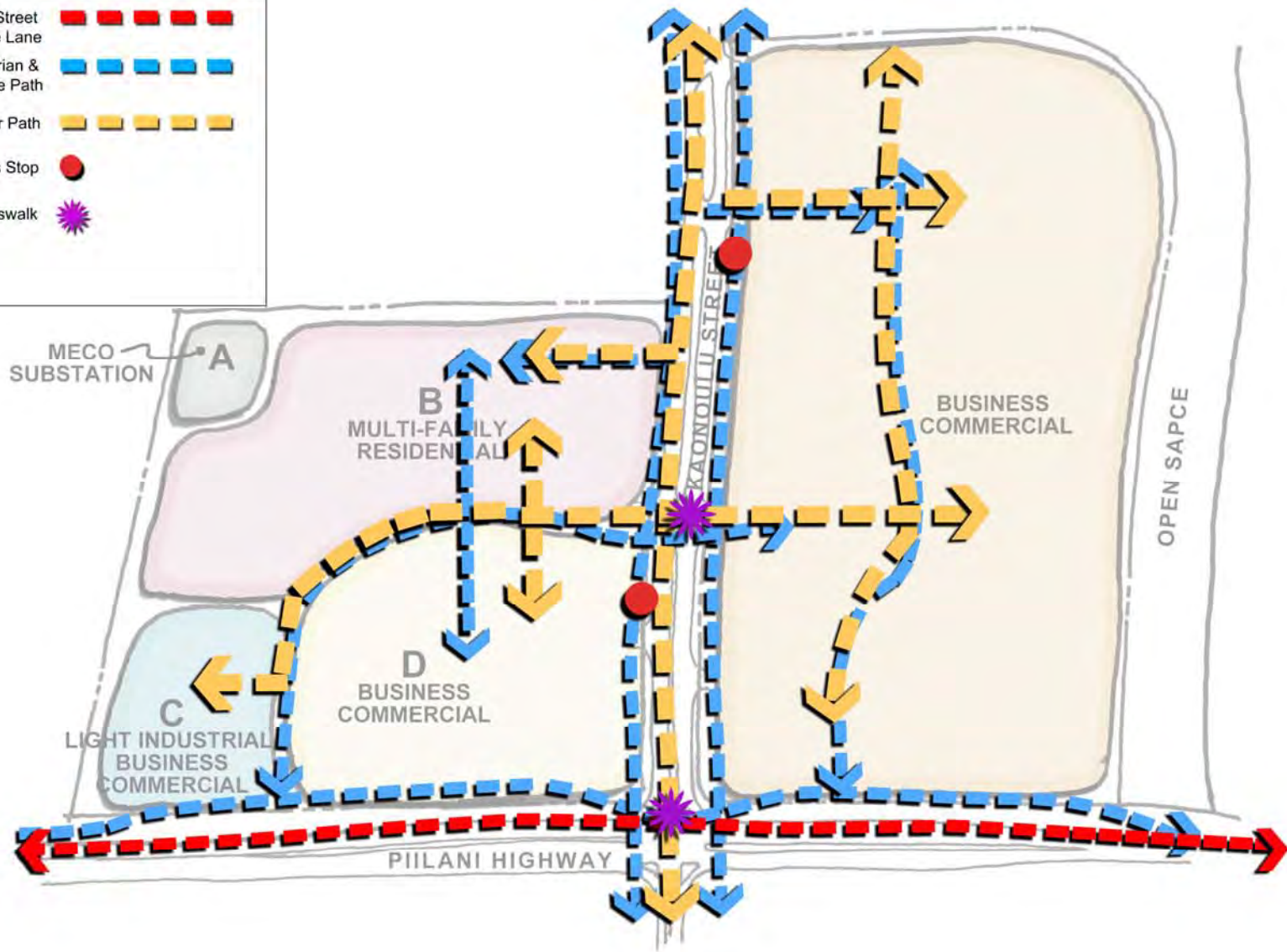
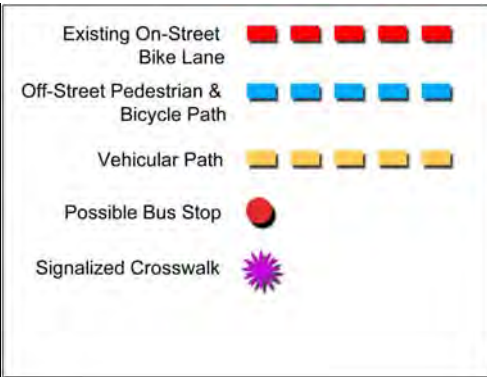
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	191	0	0	273	0	0	614	577	266	577	579	186
Stage 1	-	-	-	-	-	-	366	366	-	206	206	-
Stage 2	-	-	-	-	-	-	248	211	-	371	373	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1383	-	-	1290	-	-	404	427	773	428	426	856
Stage 1	-	-	-	-	-	-	653	623	-	796	731	-
Stage 2	-	-	-	-	-	-	756	728	-	649	618	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1383	-	-	1290	-	-	350	408	773	408	407	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	350	408	-	408	407	-
Stage 1	-	-	-	-	-	-	629	600	-	767	725	-
Stage 2	-	-	-	-	-	-	675	722	-	616	596	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	12.7	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	487	1383	-	-	1290	-	-	711
HCM Lane V/C Ratio	0.041	0.036	-	-	0.008	-	-	0.134
HCM Control Delay (s)	12.7	7.7	-	-	7.8	-	-	10.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Appendix G

Pedestrian Circulation

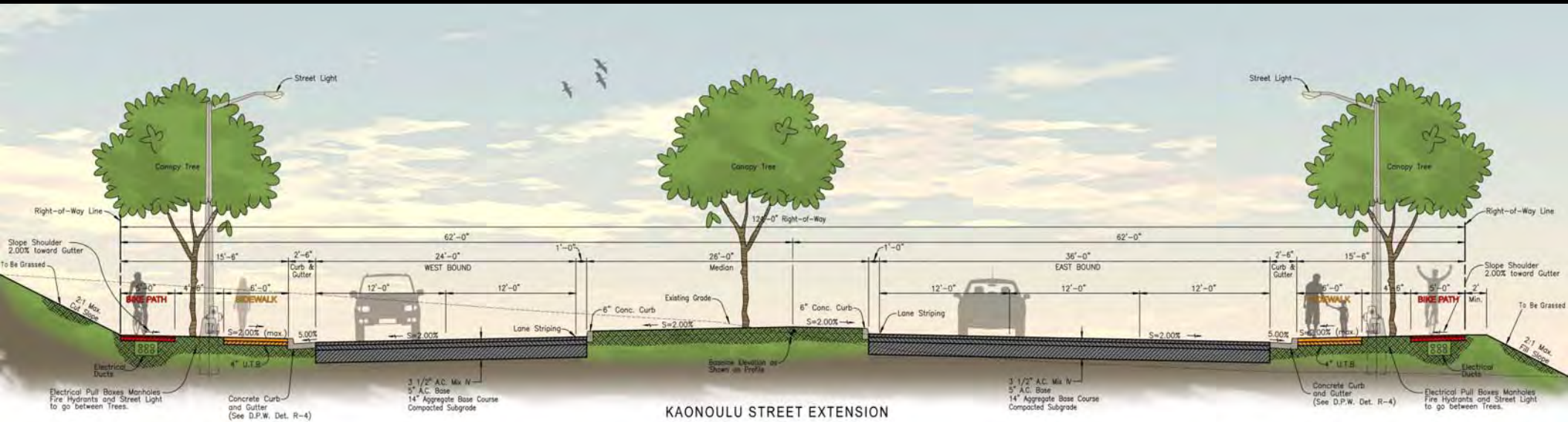


Piilani Promenade

Maui, Hawaii

Circulation Diagram

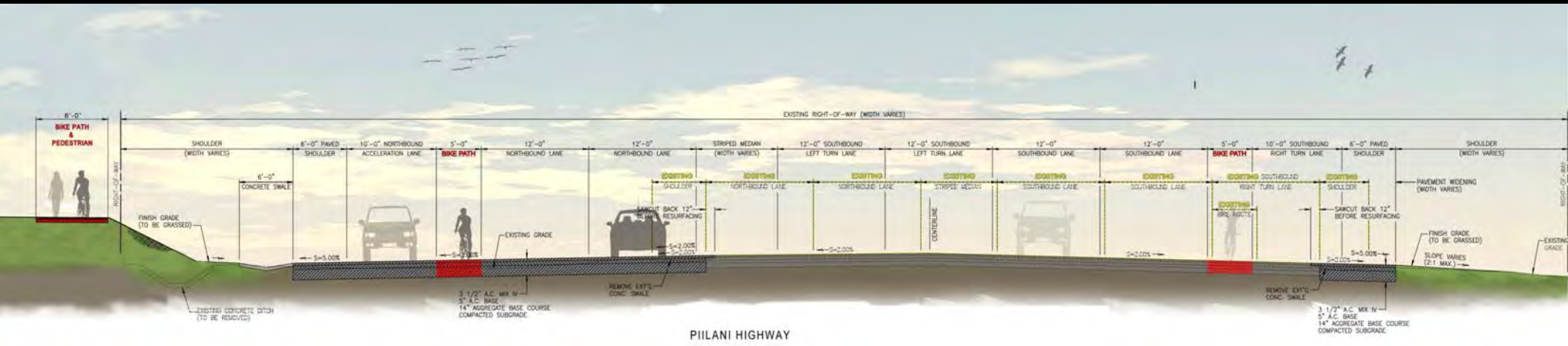




Piilani Promenade
Maui, Hawaii

Street Section - Kaonoulu Street
North - South Section Cut





Piilani Promenade

Maui, Hawaii

Street Section - Piilani Highway

East-West Section Cut of Highway



























Appendix H

Analysis Reports Future (2025) and
(2032) With Project Conditions

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	94	104	270	39	194	36	1217	126	201	1793	29
Future Volume (veh/h)	106	94	104	270	39	194	36	1217	126	201	1793	29
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	100	0	287	41	0	38	1295	0	214	1907	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	206	175	269	333	283	108	1753	784	247	2030	908
Arrive On Green	0.08	0.11	0.00	0.15	0.18	0.00	0.06	0.50	0.00	0.14	0.57	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	100	0	287	41	0	38	1295	0	214	1907	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.0	7.3	0.0	22.0	2.7	0.0	3.0	42.2	0.0	17.1	72.2	0.0
Cycle Q Clear(g_c), s	9.0	7.3	0.0	22.0	2.7	0.0	3.0	42.2	0.0	17.1	72.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	206	175	269	333	283	108	1753	784	247	2030	908
V/C Ratio(X)	0.77	0.49	0.00	1.07	0.12	0.00	0.35	0.74	0.00	0.87	0.94	0.00
Avail Cap(c_a), veh/h	208	308	262	269	373	317	135	1753	784	269	2030	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.52	0.52	0.00
Uniform Delay (d), s/veh	65.1	60.6	0.0	61.5	50.0	0.0	65.3	29.1	0.0	61.1	28.6	0.0
Incr Delay (d2), s/veh	10.3	1.8	0.0	73.5	0.2	0.0	0.7	2.8	0.0	12.7	5.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	3.9	0.0	16.3	1.4	0.0	1.5	21.2	0.0	9.3	36.9	0.0
LnGrp Delay(d),s/veh	75.4	62.4	0.0	135.0	50.1	0.0	66.1	32.0	0.0	73.8	34.5	0.0
LnGrp LOS	E	E		F	D		E	C		E	C	
Approach Vol, veh/h		213			328			1333			2121	
Approach Delay, s/veh		69.3			124.4			32.9			38.5	
Approach LOS		E			F			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.2	75.8	15.1	29.9	12.8	87.2	25.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	21.0	61.0	16.0	28.0	10.0	72.0	21.0	23.0				
Max Q Clear Time (g_c+l1), s	19.1	44.2	11.0	4.7	5.0	74.2	24.0	9.3				
Green Ext Time (p_c), s	0.1	16.4	0.1	0.5	0.0	0.0	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			45.3									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	31	101	201	29	164	35	1389	74	54	1675	20
Future Volume (veh/h)	84	31	101	201	29	164	35	1389	74	54	1675	20
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	90	33	0	216	31	0	38	1494	0	58	1801	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	74	63	225	182	155	367	2465	1103	127	1864	834
Arrive On Green	0.07	0.04	0.00	0.13	0.10	0.00	0.21	0.70	0.00	0.04	0.53	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	90	33	0	216	31	0	38	1494	0	58	1801	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	7.5	2.6	0.0	18.2	2.3	0.0	2.6	33.3	0.0	2.5	73.6	0.0
Cycle Q Clear(g_c), s	7.5	2.6	0.0	18.2	2.3	0.0	2.6	33.3	0.0	2.5	73.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	74	63	225	182	155	367	2465	1103	127	1864	834
V/C Ratio(X)	0.74	0.44	0.00	0.96	0.17	0.00	0.10	0.61	0.00	0.46	0.97	0.00
Avail Cap(c_a), veh/h	177	323	274	225	373	317	367	2465	1103	252	1864	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.64	0.64	0.00	0.66	0.66	0.00
Uniform Delay (d), s/veh	68.5	70.4	0.0	65.1	62.1	0.0	48.2	12.0	0.0	70.7	34.2	0.0
Incr Delay (d2), s/veh	8.7	5.8	0.0	49.0	0.6	0.0	0.0	0.7	0.0	0.6	10.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	1.5	0.0	12.0	1.2	0.0	1.3	16.4	0.0	1.2	38.5	0.0
LnGrp Delay(d),s/veh	77.2	76.2	0.0	114.1	62.7	0.0	48.3	12.7	0.0	71.4	44.9	0.0
LnGrp LOS	E	E		F	E		D	B		E	D	
Approach Vol, veh/h		123			247			1532			1859	
Approach Delay, s/veh		77.0			107.7			13.6			45.7	
Approach LOS		E			F			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	108.5	13.3	18.7	35.0	83.0	22.0	10.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	10.0	78.0	14.0	29.0	10.0	78.0	18.0	25.0				
Max Q Clear Time (g_c+I), s	11.5	35.3	9.5	4.3	4.6	75.6	20.2	4.6				
Green Ext Time (p_c), s	0.0	23.2	0.1	0.3	1.9	2.3	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				37.7								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔↔	↔	↔		↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (veh/h)	217	3	473	8	1	21	553	1137	5	2	1277	151
Future Volume (veh/h)	217	3	473	8	1	21	553	1137	5	2	1277	151
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	235	0	0	9	1	23	595	1223	0	2	1373	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	0	264	95	4	82	678	2359	1020	4	1670	747
Arrive On Green	0.10	0.00	0.00	0.05	0.05	0.03	0.20	0.67	0.00	0.00	0.47	0.00
Sat Flow, veh/h	3548	0	3167	1774	66	1527	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	235	0	0	9	0	24	595	1223	0	2	1373	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1593	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	0.0	0.0	0.4	0.0	1.3	15.1	15.8	0.0	0.1	30.1	0.0
Cycle Q Clear(g_c), s	5.7	0.0	0.0	0.4	0.0	1.3	15.1	15.8	0.0	0.1	30.1	0.0
Prop In Lane	1.00		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	0	264	95	0	85	678	2359	1020	4	1670	747
V/C Ratio(X)	0.66	0.00	0.00	0.09	0.00	0.28	0.88	0.52	0.00	0.52	0.82	0.00
Avail Cap(c_a), veh/h	355	0	264	138	0	124	688	2359	1020	79	1670	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.00	1.00	0.00	1.00	0.74	0.74	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.0	0.0	0.0	40.5	0.0	41.9	35.1	7.6	0.0	44.9	20.5	0.0
Incr Delay (d2), s/veh	4.3	0.0	0.0	0.4	0.0	1.8	9.5	0.6	0.0	35.0	4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.6	8.1	7.8	0.0	0.1	15.8	0.0
LnGrp Delay(d),s/veh	43.3	0.0	0.0	41.0	0.0	43.7	44.6	8.3	0.0	79.9	25.2	0.0
LnGrp LOS	D			D			D	D	A		E	C
Approach Vol, veh/h		235			33			1818			1375	
Approach Delay, s/veh		43.3			42.9			20.1			25.3	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	64.0		8.8	21.7	46.5		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	52.0			5.0	17.5	38.0		7.0				
Max Q Clear Time (g_c+I_T), s	17.8			3.3	17.1	32.1		7.7				
Green Ext Time (p_c), s	0.0	28.3		0.0	0.1	5.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				24.0								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↑	↑	↑↑	↑↑	↑		
Traffic Volume (veh/h)	394	275	93	543	605	247		
Future Volume (veh/h)	394	275	93	543	605	247		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	410	0	97	566	630	257		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	897	762	153	2245	799	328		
Arrive On Green	0.48	0.00	0.09	0.63	0.23	0.21		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	410	0	97	566	630	257		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	8.8	0.0	3.2	4.2	10.3	9.2		
Cycle Q Clear(g_c), s	8.8	0.0	3.2	4.2	10.3	9.2		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	897	762	153	2245	799	328		
V/C Ratio(X)	0.46	0.00	0.63	0.25	0.79	0.78		
Avail Cap(c_a), veh/h	897	762	177	2245	809	333		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.64	0.64	1.00	1.00		
Uniform Delay (d), s/veh	10.3	0.0	26.5	4.8	21.6	22.5		
Incr Delay (d2), s/veh	1.7	0.0	2.1	0.2	4.7	10.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.9	0.0	1.7	2.0	5.4	5.0		
LnGrp Delay(d),s/veh	12.0	0.0	28.6	4.9	26.4	32.9		
LnGrp LOS	B		C	A	C	C		
Approach Vol, veh/h	410			663	887			
Approach Delay, s/veh	12.0			8.4	28.3			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.2	32.9				42.1		17.9
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.4					36.4		12.6
Max Q Clear Time (g_c+I_T), s	10.8					6.2		12.3
Green Ext Time (p_c), s	0.0	7.7				10.7		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			18.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	297	217	191	1437	2008	449		
Future Volume (veh/h)	297	217	191	1437	2008	449		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	316	0	203	1529	2136	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	319	285	195	2619	2088	934		
Arrive On Green	0.18	0.00	0.11	0.74	0.59	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	316	0	203	1529	2136	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	17.8	0.0	11.0	19.8	59.0	0.0		
Cycle Q Clear(g_c), s	17.8	0.0	11.0	19.8	59.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	319	285	195	2619	2088	934		
V/C Ratio(X)	0.99	0.00	1.04	0.58	1.02	0.00		
Avail Cap(c_a), veh/h	319	285	195	2619	2088	934		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	40.9	0.0	44.5	6.0	20.5	0.0		
Incr Delay (d2), s/veh	47.4	0.0	75.4	1.0	25.7	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.1	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	12.9	0.0	9.5	9.9	35.9	0.0		
LnGrp Delay(d),s/veh	88.3	0.0	119.9	6.9	46.2	0.0		
LnGrp LOS	F		F	A	F			
Approach Vol, veh/h	316			1732	2136			
Approach Delay, s/veh	88.3			20.2	46.2			
Approach LOS	F			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		78.0		22.0	15.0	63.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		74.0		18.0	11.0	59.0		
Max Q Clear Time (g_c+l1), s		21.8		19.8	13.0	61.0		
Green Ext Time (p_c), s		40.6		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			38.6					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	58	294	119	83	83	120	1346	83	59	2050	107
Future Volume (veh/h)	58	58	294	119	83	83	120	1346	83	59	2050	107
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	61	63	0	129	90	0	126	1417	0	64	2158	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	93	79	228	123	105	95	2646	1184	102	2562	1146
Arrive On Green	0.05	0.05	0.00	0.07	0.07	0.00	0.05	0.75	0.00	0.03	0.72	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	61	63	0	129	90	0	126	1417	0	64	2158	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	5.1	5.0	0.0	5.5	7.1	0.0	8.0	25.3	0.0	2.8	64.7	0.0
Cycle Q Clear(g_c), s	5.1	5.0	0.0	5.5	7.1	0.0	8.0	25.3	0.0	2.8	64.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	89	93	79	228	123	105	95	2646	1184	102	2562	1146
V/C Ratio(X)	0.69	0.68	0.00	0.57	0.73	0.00	1.33	0.54	0.00	0.63	0.84	0.00
Avail Cap(c_a), veh/h	308	323	274	597	323	274	95	2646	1184	138	2562	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.1	70.1	0.0	67.9	68.7	0.0	71.0	8.0	0.0	72.0	14.7	0.0
Incr Delay (d2), s/veh	9.0	8.2	0.0	2.2	8.0	0.0	204.9	0.8	0.0	6.2	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.8	0.0	2.7	3.9	0.0	9.3	12.5	0.0	1.4	32.4	0.0
LnGrp Delay(d),s/veh	79.1	78.3	0.0	70.1	76.7	0.0	275.9	8.8	0.0	78.2	18.2	0.0
LnGrp LOS	E	E		E	E		F	A		E	B	
Approach Vol, veh/h		124			219			1543			2222	
Approach Delay, s/veh		78.7			72.8			30.6			20.0	
Approach LOS		E			E			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	116.1			11.5	12.0	112.6		13.9				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	76.0			26.0	8.0	74.0		26.0				
Max Q Clear Time (g_c+1), s	27.3			7.1	10.0	66.7		9.1				
Green Ext Time (p_c), s	0.0	37.6		0.5	0.0	6.9		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			28.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	130	65	659	131	48	492		
Future Volume (veh/h)	130	65	659	131	48	492		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	141	71	716	142	52	535		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	201	179	1004	199	66	1423		
Arrive On Green	0.11	0.11	0.66	0.66	0.04	0.76		
Sat Flow, veh/h	1774	1583	1510	300	1774	1863		
Grp Volume(v), veh/h	141	71	0	858	52	535		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1810	1774	1863		
Q Serve(g_s), s	5.0	2.7	0.0	19.6	1.9	6.2		
Cycle Q Clear(g_c), s	5.0	2.7	0.0	19.6	1.9	6.2		
Prop In Lane	1.00	1.00		0.17	1.00			
Lane Grp Cap(c), veh/h	201	179	0	1203	66	1423		
V/C Ratio(X)	0.70	0.40	0.00	0.71	0.78	0.38		
Avail Cap(c_a), veh/h	437	390	0	1203	109	1423		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	27.8	26.8	0.0	6.9	31.0	2.5		
Incr Delay (d2), s/veh	4.4	1.4	0.0	3.6	17.8	0.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.7	1.2	0.0	10.7	1.3	3.4		
LnGrp Delay(d),s/veh	32.2	28.2	0.0	10.6	48.8	3.3		
LnGrp LOS	C	C		B	D	A		
Approach Vol, veh/h	212		858			587		
Approach Delay, s/veh	30.9		10.6			7.3		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.4	47.2				53.7		11.3
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	33.0					41.0		16.0
Max Q Clear Time (g_c+I_T), s	21.6					8.2		7.0
Green Ext Time (p_c), s	0.0	5.6				8.7		0.5
Intersection Summary								
HCM 2010 Ctrl Delay			12.0					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	40	75	139	155	15	60	47	1446	285	120	2288	74
Future Volume (veh/h)	40	75	139	155	15	60	47	1446	285	120	2288	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	82	0	168	16	65	49	1522	310	130	2408	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	70	253	184	11	253	63	2228	997	161	2423	1084
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.16	0.04	0.63	0.63	0.09	0.68	0.00
Sat Flow, veh/h	0	438	1583	723	69	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	124	0	0	184	0	65	49	1522	310	130	2408	0
Grp Sat Flow(s),veh/h/ln	438	0	1583	791	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	3.6	2.7	28.0	9.0	7.2	67.1	0.0
Cycle Q Clear(g_c), s	16.0	0.0	0.0	16.0	0.0	3.6	2.7	28.0	9.0	7.2	67.1	0.0
Prop In Lane	0.34		1.00	0.91		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	0	253	195	0	253	63	2228	997	161	2423	1084
V/C Ratio(X)	1.05	0.00	0.00	0.94	0.00	0.26	0.78	0.68	0.31	0.81	0.99	0.00
Avail Cap(c_a), veh/h	118	0	253	195	0	253	71	2228	997	248	2423	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.6	0.0	0.0	44.5	0.0	36.8	47.9	12.0	8.5	44.6	15.5	0.0
Incr Delay (d2), s/veh	96.3	0.0	0.0	47.7	0.0	0.5	38.5	1.7	0.8	10.7	16.8	0.0
Initial Q Delay(d3),s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	0.0	7.7	0.0	1.6	2.0	14.1	4.1	4.0	37.8	0.0
LnGrp Delay(d),s/veh	138.5	0.0	0.0	92.2	0.0	37.3	86.3	13.8	9.4	55.3	32.4	0.0
LnGrp LOS	F			F		D	F	B	A	E	C	
Approach Vol, veh/h		124			249			1881			2538	
Approach Delay, s/veh		138.5			77.9			14.9			33.6	
Approach LOS		F			E			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.1	66.9		20.0	7.5	72.5		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	14.0	58.0		16.0	4.0	68.0		16.0				
Max Q Clear Time (g_c+I), s	17.5	30.0		18.0	4.7	69.1		18.0				
Green Ext Time (p_c), s	0.1	26.0		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				31.3								
HCM 2010 LOS				C								

HCM 2010 TWSC
 9: KENOLIO ROAD & KAONOULU STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	28	179	22	40	193	72	22	8	57	179	8	15
Future Vol, veh/h	28	179	22	40	193	72	22	8	57	179	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	188	23	42	203	76	23	8	60	188	8	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	212	0	0	596	622	200	618	596	241
Stage 1	-	-	-	-	-	-	259	259	-	325	325	-
Stage 2	-	-	-	-	-	-	337	363	-	293	271	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1284	-	-	1358	-	-	415	403	841	402	417	798
Stage 1	-	-	-	-	-	-	746	694	-	687	649	-
Stage 2	-	-	-	-	-	-	677	625	-	715	685	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1284	-	-	1358	-	-	384	382	841	352	395	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	384	382	-	352	395	-
Stage 1	-	-	-	-	-	-	729	678	-	671	629	-
Stage 2	-	-	-	-	-	-	634	606	-	641	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1	11.6	24.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	384	733	1284	-	-	1358	-	-	352	589
HCM Lane V/C Ratio	0.06	0.093	0.023	-	-	0.031	-	-	0.535	0.041
HCM Control Delay (s)	15	10.4	7.9	-	-	7.7	-	-	26.4	11.4
HCM Lane LOS	C	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	3	0.1

HCM 2010 TWSC
 10: KAONOULU STREET & ALULIKE STREET

Future (2025) With Project
 Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↕	↕		↕	↕	
Traffic Vol, veh/h	43	186	11	11	213	9	14	0	10	13	0	56
Future Vol, veh/h	43	186	11	11	213	9	14	0	10	13	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	207	12	12	237	10	16	0	11	14	0	62

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	219	0	0	605	579	213	580	580	242
Stage 1	-	-	-	-	-	-	308	308	-	266	266	-
Stage 2	-	-	-	-	-	-	297	271	-	314	314	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1319	-	-	1350	-	-	410	426	827	426	426	797
Stage 1	-	-	-	-	-	-	702	660	-	739	689	-
Stage 2	-	-	-	-	-	-	712	685	-	697	656	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1319	-	-	1350	-	-	365	407	827	406	407	797
Mov Cap-2 Maneuver	-	-	-	-	-	-	365	407	-	406	407	-
Stage 1	-	-	-	-	-	-	676	636	-	712	683	-
Stage 2	-	-	-	-	-	-	651	679	-	663	632	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.4	13	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	476	1319	-	-	1350	-	-	675
HCM Lane V/C Ratio	0.056	0.036	-	-	0.009	-	-	0.114
HCM Control Delay (s)	13	7.8	-	-	7.7	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.4

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) With Project
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	61	88	222	56	198	71	2032	178	158	1966	85
Future Volume (veh/h)	75	61	88	222	56	198	71	2032	178	158	1966	85
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	77	63	0	229	58	0	73	2095	0	163	2027	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	205	175	196	297	253	128	2050	917	171	2137	956
Arrive On Green	0.06	0.11	0.00	0.11	0.16	0.00	0.07	0.58	0.00	0.10	0.60	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	77	63	0	229	58	0	73	2095	0	163	2027	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.2	4.5	0.0	16.0	3.9	0.0	5.8	84.0	0.0	13.3	77.0	0.0
Cycle Q Clear(g_c), s	6.2	4.5	0.0	16.0	3.9	0.0	5.8	84.0	0.0	13.3	77.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	205	175	196	297	253	128	2050	917	171	2137	956
V/C Ratio(X)	0.71	0.31	0.00	1.17	0.20	0.00	0.57	1.02	0.00	0.95	0.95	0.00
Avail Cap(c_a), veh/h	147	308	262	196	360	306	135	2050	917	171	2137	956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.49	0.49	0.00
Uniform Delay (d), s/veh	66.8	59.4	0.0	64.5	52.9	0.0	65.1	30.5	0.0	65.2	26.7	0.0
Incr Delay (d2), s/veh	9.7	0.8	0.0	117.6	0.3	0.0	2.9	25.6	0.0	35.2	6.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.4	0.0	14.2	2.0	0.0	2.9	48.0	0.0	8.2	39.2	0.0
LnGrp Delay(d),s/veh	76.5	60.2	0.0	182.1	53.2	0.0	68.0	56.1	0.0	100.3	32.7	0.0
LnGrp LOS	E	E		F	D		E	F		F	C	
Approach Vol, veh/h		140			287			2168			2190	
Approach Delay, s/veh		69.2			156.0			56.5			37.7	
Approach LOS		E			F			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	88.0	11.9	27.1	14.5	91.5	19.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	13.0	75.0	11.0	27.0	10.0	78.0	15.0	23.0				
Max Q Clear Time (g_c+I1), s	15.3	86.0	8.2	5.9	7.8	79.0	18.0	6.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			54.2									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	50	64	124	26	86	61	1999	156	148	2021	65
Future Volume (veh/h)	31	50	64	124	26	86	61	1999	156	148	2021	65
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	32	52	0	128	27	0	63	2061	0	153	2084	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	103	88	156	129	109	369	2539	1136	188	1995	892
Arrive On Green	0.03	0.06	0.00	0.05	0.07	0.00	0.21	0.72	0.00	0.05	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	32	52	0	128	27	0	63	2061	0	153	2084	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	2.0	3.0	0.0	4.1	1.5	0.0	3.2	43.4	0.0	4.8	62.0	0.0
Cycle Q Clear(g_c), s	2.0	3.0	0.0	4.1	1.5	0.0	3.2	43.4	0.0	4.8	62.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	103	88	156	129	109	369	2539	1136	188	1995	892
V/C Ratio(X)	0.57	0.50	0.00	0.82	0.21	0.00	0.17	0.81	0.00	0.82	1.04	0.00
Avail Cap(c_a), veh/h	97	389	331	156	373	317	369	2539	1136	188	1995	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.16	0.16	0.00	0.37	0.37	0.00
Uniform Delay (d), s/veh	52.5	50.5	0.0	52.0	48.4	0.0	35.8	10.5	0.0	51.5	24.0	0.0
Incr Delay (d2), s/veh	8.7	5.3	0.0	27.7	1.1	0.0	0.0	0.5	0.0	9.3	26.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.7	0.0	2.5	0.8	0.0	1.6	21.1	0.0	2.5	37.2	0.0
LnGrp Delay(d),s/veh	61.2	55.8	0.0	79.7	49.5	0.0	35.8	11.0	0.0	60.8	50.1	0.0
LnGrp LOS	E	E		E	D		D	B		E	F	
Approach Vol, veh/h		84			155			2124			2237	
Approach Delay, s/veh		57.8			74.5			11.8			50.9	
Approach LOS		E			E			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	82.9	6.5	10.6	26.9	66.0	8.0	9.1				
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	61.0	5.0	21.0	5.0	61.0	4.0	22.0					
Max Q Clear Time (g_c+I), s	45.4	4.0	3.5	5.2	64.0	6.1	5.0					
Green Ext Time (p_c), s	0.0	14.2	0.0	0.3	0.0	0.0	0.3					
Intersection Summary												
HCM 2010 Ctrl Delay				33.7								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵	↵↵	↵	↵		↵↵	↵↵	↵	↵	↵↵	↵
Traffic Volume (veh/h)	215	2	560	27	17	41	574	1571	18	5	1662	262
Future Volume (veh/h)	215	2	560	27	17	41	574	1571	18	5	1662	262
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	227	0	0	28	18	43	604	1654	0	5	1749	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	0	274	103	29	68	605	2492	1088	9	1888	845
Arrive On Green	0.10	0.00	0.00	0.06	0.06	0.04	0.18	0.70	0.00	0.01	0.53	0.00
Sat Flow, veh/h	3548	0	3167	1774	489	1168	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	227	0	0	28	0	61	604	1654	0	5	1749	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1657	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.4	0.0	0.0	1.8	0.0	4.3	21.1	31.2	0.0	0.3	54.7	0.0
Cycle Q Clear(g_c), s	7.4	0.0	0.0	1.8	0.0	4.3	21.1	31.2	0.0	0.3	54.7	0.0
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	0	274	103	0	97	605	2492	1088	9	1888	845
V/C Ratio(X)	0.65	0.00	0.00	0.27	0.00	0.63	1.00	0.66	0.00	0.55	0.93	0.00
Avail Cap(c_a), veh/h	532	0	435	103	0	97	605	2492	1088	59	1888	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.00	1.00	0.00	1.00	0.48	0.48	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.0	0.0	0.0	54.1	0.0	55.9	49.4	9.9	0.0	59.6	25.8	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.0	1.4	0.0	12.5	24.9	0.7	0.0	17.9	9.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	0.9	0.0	2.3	12.1	15.2	0.0	0.2	28.9	0.0
LnGrp Delay(d),s/veh	53.7	0.0	0.0	55.4	0.0	68.4	74.3	10.5	0.0	77.5	35.2	0.0
LnGrp LOS	D			E		E	E	B		E	D	
Approach Vol, veh/h		227			89			2258			1754	
Approach Delay, s/veh		53.7			64.4			27.6			35.3	
Approach LOS		D			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	88.5		11.0	25.1	68.0		15.9				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	73.0			5.0	20.6	55.9		16.0				
Max Q Clear Time (g_c+I), s	33.2			6.3	23.1	56.7		9.4				
Green Ext Time (p_c), s	0.0	37.6		0.0	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				32.8								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	548	509	190	563	468	236		
Future Volume (veh/h)	548	509	190	563	468	236		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	565	0	196	580	482	243		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	887	754	243	2407	642	256		
Arrive On Green	0.48	0.00	0.27	1.00	0.19	0.16		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	565	0	196	580	482	243		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	13.7	0.0	6.2	0.0	7.9	9.1		
Cycle Q Clear(g_c), s	13.7	0.0	6.2	0.0	7.9	9.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	887	754	243	2407	642	256		
V/C Ratio(X)	0.64	0.00	0.81	0.24	0.75	0.95		
Avail Cap(c_a), veh/h	887	754	266	2407	642	256		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.57	0.57	1.00	1.00		
Uniform Delay (d), s/veh	11.8	0.0	21.0	0.0	23.1	24.9		
Incr Delay (d2), s/veh	3.5	0.0	8.2	0.1	4.4	42.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.8	0.0	3.5	0.0	4.1	6.9		
LnGrp Delay(d),s/veh	15.3	0.0	29.3	0.1	27.5	66.9		
LnGrp LOS	B		C	A	C	E		
Approach Vol, veh/h	565			776	725			
Approach Delay, s/veh	15.3			7.5	40.7			
Approach LOS	B			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.2	32.6				44.8		15.2
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.3					39.3		9.7
Max Q Clear Time (g_c+I), s	15.7					2.0		11.1
Green Ext Time (p_c), s	0.0	6.8				14.4		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			21.3					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	444	387	303	2050	1847	501		
Future Volume (veh/h)	444	387	303	2050	1847	501		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	448	0	306	2071	1866	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	414	369	281	2477	1799	805		
Arrive On Green	0.23	0.00	0.16	0.70	0.51	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	448	0	306	2071	1866	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	28.0	0.0	19.0	50.8	61.0	0.0		
Cycle Q Clear(g_c), s	28.0	0.0	19.0	50.8	61.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	414	369	281	2477	1799	805		
V/C Ratio(X)	1.08	0.00	1.09	0.84	1.04	0.00		
Avail Cap(c_a), veh/h	414	369	281	2477	1799	805		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	46.0	0.0	50.5	13.0	29.5	0.0		
Incr Delay (d2), s/veh	68.1	0.0	79.7	3.5	31.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	21.5	0.0	15.5	25.7	37.4	0.0		
LnGrp Delay(d),s/veh	114.1	0.0	130.2	16.5	61.0	0.0		
LnGrp LOS	F		F	B	F			
Approach Vol, veh/h	448			2377	1866			
Approach Delay, s/veh	114.1			31.2	61.0			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		88.0		32.0	23.0	65.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		84.0		28.0	19.0	61.0		
Max Q Clear Time (g_c+l1), s		52.8		30.0	21.0	63.0		
Green Ext Time (p_c), s		27.8		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			51.0					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	189	212	316	174	235	151	2012	325	245	1932	126
Future Volume (veh/h)	92	189	212	316	174	235	151	2012	325	245	1932	126
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	96	205	0	343	189	0	157	2096	0	266	2012	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.96	0.92	0.96	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	238	202	425	230	196	130	2061	922	206	2013	901
Arrive On Green	0.13	0.13	0.00	0.12	0.12	0.00	0.07	0.58	0.00	0.06	0.57	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	96	205	0	343	189	0	157	2096	0	266	2012	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	7.5	16.2	0.0	14.6	14.8	0.0	11.0	87.3	0.0	9.0	85.2	0.0
Cycle Q Clear(g_c), s	7.5	16.2	0.0	14.6	14.8	0.0	11.0	87.3	0.0	9.0	85.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	238	202	425	230	196	130	2061	922	206	2013	901
V/C Ratio(X)	0.42	0.86	0.00	0.81	0.82	0.00	1.21	1.02	0.00	1.29	1.00	0.00
Avail Cap(c_a), veh/h	308	323	274	597	323	274	130	2061	922	206	2013	901
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.4	64.2	0.0	64.0	64.1	0.0	69.5	31.3	0.0	70.5	32.3	0.0
Incr Delay (d2), s/veh	1.3	16.2	0.0	5.5	11.0	0.0	144.9	24.2	0.0	161.0	19.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	9.4	0.0	7.2	8.4	0.0	10.6	49.3	0.0	8.9	46.9	0.0
LnGrp Delay(d),s/veh	61.6	80.3	0.0	69.5	75.1	0.0	214.4	55.6	0.0	231.5	52.2	0.0
LnGrp LOS	E	F		E	E		F	F		F	D	
Approach Vol, veh/h		301			532			2253			2278	
Approach Delay, s/veh		74.4			71.5			66.6			73.1	
Approach LOS		E			E			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.0	91.3		23.1	15.0	89.3		22.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	73.0			26.0	11.0	71.0		26.0				
Max Q Clear Time (g_c+I1), s	89.3			18.2	13.0	87.2		16.8				
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	0.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay				70.3								
HCM 2010 LOS				E								

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	168	100	795	265	107	835		
Future Volume (veh/h)	168	100	795	265	107	835		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	170	101	803	268	108	843		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	215	192	908	303	118	1471		
Arrive On Green	0.12	0.12	0.68	0.68	0.07	0.79		
Sat Flow, veh/h	1774	1583	1338	446	1774	1863		
Grp Volume(v), veh/h	170	101	0	1071	108	843		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1784	1774	1863		
Q Serve(g_s), s	8.4	5.4	0.0	43.4	5.4	15.6		
Cycle Q Clear(g_c), s	8.4	5.4	0.0	43.4	5.4	15.6		
Prop In Lane	1.00	1.00		0.25	1.00			
Lane Grp Cap(c), veh/h	215	192	0	1211	118	1471		
V/C Ratio(X)	0.79	0.53	0.00	0.88	0.91	0.57		
Avail Cap(c_a), veh/h	315	281	0	1211	118	1471		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	38.4	37.1	0.0	11.6	41.7	3.6		
Incr Delay (d2), s/veh	8.1	2.2	0.0	9.6	56.5	1.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.6	2.5	0.0	24.4	4.5	8.4		
LnGrp Delay(d),s/veh	46.5	39.4	0.0	21.2	98.3	5.3		
LnGrp LOS	D	D		C	F	A		
Approach Vol, veh/h	271		1071			951		
Approach Delay, s/veh	43.9		21.2			15.8		
Approach LOS	D		C			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.0	65.1				75.1		14.9
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	56.0					66.0		16.0
Max Q Clear Time (g_c+I1), s	45.4					17.6		10.4
Green Ext Time (p_c), s	0.0	7.5				17.6		0.5
Intersection Summary								
HCM 2010 Ctrl Delay			21.6					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2025) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕↕	↗	↖	↕↕	↗
Traffic Volume (veh/h)	84	15	107	80	10	30	64	2376	65	25	2305	118
Future Volume (veh/h)	84	15	107	80	10	30	64	2376	65	25	2305	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	86	16	0	87	11	33	65	2424	71	27	2352	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.92	0.98	0.92	0.92	0.92	0.98	0.98	0.92	0.92	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	28	232	279	31	232	82	2453	1097	39	2368	1059
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.15	0.05	0.69	0.69	0.02	0.67	0.00
Sat Flow, veh/h	746	193	1583	1369	210	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	102	0	0	98	0	33	65	2424	71	27	2352	0
Grp Sat Flow(s),veh/h/ln	940	0	1583	1580	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.6	0.0	0.0	0.0	0.0	1.6	3.1	57.8	1.2	1.3	56.8	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	4.8	0.0	1.6	3.1	57.8	1.2	1.3	56.8	0.0
Prop In Lane	0.84		1.00	0.89		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	0	232	310	0	232	82	2453	1097	39	2368	1059
V/C Ratio(X)	0.48	0.00	0.00	0.32	0.00	0.14	0.79	0.99	0.06	0.69	0.99	0.00
Avail Cap(c_a), veh/h	268	0	292	364	0	292	82	2453	1097	82	2368	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.7	0.0	0.0	33.6	0.0	32.3	40.9	13.0	4.3	42.1	14.2	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.6	0.0	0.3	40.1	15.4	0.0	19.4	16.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	2.2	0.0	0.7	2.4	32.9	0.5	0.8	32.7	0.0
LnGrp Delay(d),s/veh	39.4	0.0	0.0	34.2	0.0	32.5	81.0	28.4	4.3	61.5	31.0	0.0
LnGrp LOS	D			C		C	F	C	A	E	C	
Approach Vol, veh/h		102			131			2560			2379	
Approach Delay, s/veh		39.4			33.8			29.0			31.4	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	64.1		16.7	8.0	62.0		16.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	58.0			16.0	4.0	58.0		16.0				
Max Q Clear Time (g_c+I), s	59.8			12.3	5.1	58.8		6.8				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	0.0		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay				30.4								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	11											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	48	328	31	71	302	133	20	8	52	112	12	18
Future Vol, veh/h	48	328	31	71	302	133	20	8	52	112	12	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	364	34	79	336	148	22	9	58	124	13	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	483	0	0	399	0	0	1072	1129	382	1089	1073	409
Stage 1	-	-	-	-	-	-	488	488	-	567	567	-
Stage 2	-	-	-	-	-	-	584	641	-	522	506	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1080	-	-	1160	-	-	198	204	665	193	220	642
Stage 1	-	-	-	-	-	-	561	550	-	508	507	-
Stage 2	-	-	-	-	-	-	498	469	-	538	540	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1080	-	-	1160	-	-	166	181	665	155	195	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	166	181	-	155	195	-
Stage 1	-	-	-	-	-	-	533	523	-	483	472	-
Stage 2	-	-	-	-	-	-	437	437	-	459	514	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1.2	17.6	71.1
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	166	490	1080	-	-	1160	-	-	155	335
HCM Lane V/C Ratio	0.134	0.136	0.049	-	-	0.068	-	-	0.803	0.1
HCM Control Delay (s)	30	13.5	8.5	-	-	8.3	-	-	85.6	16.9
HCM Lane LOS	D	B	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.5	0.5	0.2	-	-	0.2	-	-	5.2	0.3

Intersection												
Int Delay, s/veh	2.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	79	378	14	17	306	17	5	0	14	16	0	51
Future Vol, veh/h	79	378	14	17	306	17	5	0	14	16	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	420	16	19	340	19	6	0	16	18	0	57

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	359	0	0	436	0	0	1019	1000	428	998	998	349
Stage 1	-	-	-	-	-	-	603	603	-	387	387	-
Stage 2	-	-	-	-	-	-	416	397	-	611	611	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1200	-	-	1124	-	-	215	243	627	223	244	694
Stage 1	-	-	-	-	-	-	486	488	-	637	610	-
Stage 2	-	-	-	-	-	-	614	603	-	481	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1200	-	-	1124	-	-	184	221	627	203	222	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	221	-	203	222	-
Stage 1	-	-	-	-	-	-	450	452	-	590	600	-
Stage 2	-	-	-	-	-	-	554	593	-	435	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.4	14.9	14.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	1200	-	-	1124	-	-	440
HCM Lane V/C Ratio	0.055	0.073	-	-	0.017	-	-	0.169
HCM Control Delay (s)	14.9	8.2	-	-	8.3	-	-	14.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.1	-	-	0.6

HCM 2010 Signalized Intersection Summary
1: PIILANI HIGHWAY & OHUKAI STREET

Future (2025) With Project
Timing Plan: Saturday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	67	70	160	50	166	71	1622	158	136	1551	60
Future Volume (veh/h)	66	67	70	160	50	166	71	1622	158	136	1551	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	69	0	165	52	0	73	1672	0	140	1599	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	223	189	202	330	280	137	1948	872	185	2043	914
Arrive On Green	0.06	0.12	0.00	0.11	0.18	0.00	0.08	0.55	0.00	0.10	0.58	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	68	69	0	165	52	0	73	1672	0	140	1599	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.0	4.5	0.0	12.2	3.2	0.0	5.3	53.9	0.0	10.3	46.6	0.0
Cycle Q Clear(g_c), s	5.0	4.5	0.0	12.2	3.2	0.0	5.3	53.9	0.0	10.3	46.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	100	223	189	202	330	280	137	1948	872	185	2043	914
V/C Ratio(X)	0.68	0.31	0.00	0.82	0.16	0.00	0.53	0.86	0.00	0.76	0.78	0.00
Avail Cap(c_a), veh/h	159	334	284	225	404	343	146	1957	876	199	2063	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	62.0	53.9	0.0	57.9	46.6	0.0	59.4	25.6	0.0	58.3	21.8	0.0
Incr Delay (d2), s/veh	7.9	0.8	0.0	18.8	0.2	0.0	1.2	4.4	0.0	12.5	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.4	0.0	7.0	1.7	0.0	2.6	27.4	0.0	5.7	23.3	0.0
LnGrp Delay(d),s/veh	69.9	54.7	0.0	76.7	46.8	0.0	60.6	30.0	0.0	70.8	24.1	0.0
LnGrp LOS	E	D		E	D		E	C		E	C	
Approach Vol, veh/h		137			217			1745			1739	
Approach Delay, s/veh		62.2			69.6			31.3			27.9	
Approach LOS		E			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.9	77.7	10.5	27.7	14.3	81.3	18.2	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	14.0	73.0	11.0	28.0	10.0	77.0	16.0	23.0				
Max Q Clear Time (g_c+I1), s	12.3	55.9	7.0	5.2	7.3	48.6	14.2	6.5				
Green Ext Time (p_c), s	0.0	16.8	0.1	0.4	0.0	27.5	0.1	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			33.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2025) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	32	81	96	22	87	72	1667	112	56	1595	28
Future Volume (veh/h)	33	32	81	96	22	87	72	1667	112	56	1595	28
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	34	33	0	98	22	0	73	1701	0	57	1628	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	83	70	172	116	99	154	2654	1187	141	2492	1115
Arrive On Green	0.03	0.04	0.00	0.05	0.06	0.00	0.09	0.75	0.00	0.04	0.70	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	34	33	0	98	22	0	73	1701	0	57	1628	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	2.5	2.3	0.0	3.6	1.5	0.0	5.1	30.2	0.0	2.1	33.0	0.0
Cycle Q Clear(g_c), s	2.5	2.3	0.0	3.6	1.5	0.0	5.1	30.2	0.0	2.1	33.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	57	83	70	172	116	99	154	2654	1187	141	2492	1115
V/C Ratio(X)	0.60	0.40	0.00	0.57	0.19	0.00	0.47	0.64	0.00	0.40	0.65	0.00
Avail Cap(c_a), veh/h	95	328	279	211	342	291	163	2654	1187	158	2492	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	62.4	60.7	0.0	60.7	58.1	0.0	56.8	7.9	0.0	61.1	10.6	0.0
Incr Delay (d2), s/veh	9.8	4.4	0.0	3.0	1.1	0.0	0.8	1.2	0.0	0.7	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.3	0.0	1.8	0.8	0.0	2.6	15.1	0.0	1.0	16.3	0.0
LnGrp Delay(d),s/veh	72.2	65.1	0.0	63.7	59.3	0.0	57.6	9.1	0.0	61.8	12.0	0.0
LnGrp LOS	E	E		E	E		E	A		E	B	
Approach Vol, veh/h		67			120			1774			1685	
Approach Delay, s/veh		68.7			62.9			11.1			13.6	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	102.0	7.2	12.1	15.4	96.0	9.5	9.8				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	97.0	6.0	23.0	11.0	91.0	7.0	22.0					
Max Q Clear Time (g_c+I), s	32.2	4.5	3.5	7.1	35.0	5.6	4.3					
Green Ext Time (p_c), s	0.0	35.2	0.0	0.2	3.5	29.7	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			15.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	0	406	3	0	1	462	1343	11	3	1272	222
Future Volume (veh/h)	240	0	406	3	0	1	462	1343	11	3	1272	222
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	250	0	0	3	0	1	481	1399	0	3	1325	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	0	304	40	0	36	586	2573	1124	6	1998	894
Arrive On Green	0.11	0.00	0.00	0.02	0.00	0.01	0.17	0.73	0.00	0.00	0.56	0.00
Sat Flow, veh/h	3548	0	3167	1774	0	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	250	0	0	3	0	1	481	1399	0	3	1325	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.8	0.0	0.0	0.2	0.0	0.1	15.6	20.7	0.0	0.2	30.2	0.0
Cycle Q Clear(g_c), s	7.8	0.0	0.0	0.2	0.0	0.1	15.6	20.7	0.0	0.2	30.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	304	40	0	36	586	2573	1124	6	1998	894
V/C Ratio(X)	0.65	0.00	0.00	0.08	0.00	0.03	0.82	0.54	0.00	0.53	0.66	0.00
Avail Cap(c_a), veh/h	705	0	588	107	0	96	847	2904	1272	61	2170	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.4	0.0	0.0	55.4	0.0	56.3	46.3	7.1	0.0	57.6	17.6	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0	0.8	0.0	0.3	4.3	0.3	0.0	25.9	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	0.1	0.0	0.0	7.8	10.0	0.0	0.1	15.0	0.0
LnGrp Delay(d),s/veh	51.3	0.0	0.0	56.2	0.0	56.7	50.7	7.4	0.0	83.6	18.5	0.0
LnGrp LOS	D			E			E	D	A		F	B
Approach Vol, veh/h		250			4			1880			1328	
Approach Delay, s/veh		51.3			56.3			18.5			18.6	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	88.2		6.6	23.2	69.4		16.6				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	93.0			5.0	28.0	69.0		21.0				
Max Q Clear Time (g_c+I), s	22.7			2.2	17.6	32.2		9.8				
Green Ext Time (p_c), s	0.0	52.3		0.0	1.6	31.2		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay				20.9								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2025) With Project
 Timing Plan: Saturday



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	458	396	169	452	468	222		
Future Volume (veh/h)	458	396	169	452	468	222		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	477	0	176	471	488	231		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	766	651	242	2219	736	291		
Arrive On Green	0.41	0.00	0.14	0.63	0.21	0.18		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	477	0	176	471	488	231		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	10.2	0.0	4.8	2.9	6.5	7.0		
Cycle Q Clear(g_c), s	10.2	0.0	4.8	2.9	6.5	7.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	766	651	242	2219	736	291		
V/C Ratio(X)	0.62	0.00	0.73	0.21	0.66	0.79		
Avail Cap(c_a), veh/h	1026	872	318	2865	774	309		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	11.7	0.0	20.8	4.0	18.1	19.6		
Incr Delay (d2), s/veh	1.8	0.0	3.5	0.1	1.5	11.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	15.5	0.0	2.6	1.4	3.2	3.9		
LnGrp Delay(d),s/veh	13.5	0.0	24.3	4.1	19.6	30.9		
LnGrp LOS	B		C	A	B	C		
Approach Vol, veh/h	477			647	719			
Approach Delay, s/veh	13.5			9.6	23.3			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.9	24.7				35.5		14.8
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	26.2					39.2		9.8
Max Q Clear Time (g_c+I), s	12.2					4.9		9.0
Green Ext Time (p_c), s	0.1	7.0				10.9		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			15.9					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2025) With Project
Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	454	338	305	1395	1363	514		
Future Volume (veh/h)	454	338	305	1395	1363	514		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	463	0	311	1423	1391	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	489	437	334	2370	1606	719		
Arrive On Green	0.28	0.00	0.19	0.67	0.45	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	463	0	311	1423	1391	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	37.4	0.0	25.2	32.5	51.8	0.0		
Cycle Q Clear(g_c), s	37.4	0.0	25.2	32.5	51.8	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	489	437	334	2370	1606	719		
V/C Ratio(X)	0.95	0.00	0.93	0.60	0.87	0.00		
Avail Cap(c_a), veh/h	533	476	364	2370	1606	719		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	51.9	0.0	58.4	13.4	36.0	0.0		
Incr Delay (d2), s/veh	25.2	0.0	28.9	1.1	6.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	21.8	0.0	15.0	16.2	26.8	0.0		
LnGrp Delay(d),s/veh	77.2	0.0	87.4	14.5	42.5	0.0		
LnGrp LOS	E		F	B	D			
Approach Vol, veh/h	463			1734	1391			
Approach Delay, s/veh	77.2			27.6	42.5			
Approach LOS	E			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		102.0		44.4	31.6	70.4		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		98.0		44.0	30.0	64.0		
Max Q Clear Time (g_c+l1), s		34.5		39.4	27.2	53.8		
Green Ext Time (p_c), s		29.4		0.9	0.3	8.5		
Intersection Summary								
HCM 2010 Ctrl Delay			39.8					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
6: PIILANI HIGHWAY & KAONOULU STREET

Future (2025) With Project
Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	173	195	330	146	269	132	1496	353	275	1387	113
Future Volume (veh/h)	103	173	195	330	146	269	132	1496	353	275	1387	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	106	188	0	359	159	0	136	1542	0	299	1430	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	209	178	407	220	187	227	2514	1125	387	2514	1125
Arrive On Green	0.11	0.11	0.00	0.12	0.12	0.00	0.71	0.71	0.00	0.71	0.71	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	373	3539	1583	649	3539	1583
Grp Volume(v), veh/h	106	188	0	359	159	0	136	1542	0	299	1430	0
Grp Sat Flow(s),veh/h/ln	774	1863	1583	1721	1863	1583	373	1770	1583	325	1770	1583
Q Serve(g_s), s	11.4	20.2	0.0	20.8	16.7	0.0	56.5	45.2	0.0	88.6	39.7	0.0
Cycle Q Clear(g_c), s	11.4	20.2	0.0	20.8	16.7	0.0	96.2	45.2	0.0	133.9	39.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	199	209	178	407	220	187	227	2514	1125	387	2514	1125
V/C Ratio(X)	0.53	0.90	0.00	0.88	0.72	0.00	0.60	0.61	0.00	0.77	0.57	0.00
Avail Cap(c_a), veh/h	228	239	203	476	258	219	228	2519	1127	388	2519	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	84.8	88.7	0.0	87.8	86.0	0.0	37.6	15.0	0.0	49.4	14.2	0.0
Incr Delay (d2), s/veh	2.2	30.6	0.0	15.8	8.0	0.0	4.3	0.4	0.0	9.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	12.2	0.0	10.8	9.1	0.0	6.1	22.2	0.0	8.4	19.4	0.0
LnGrp Delay(d),s/veh	87.0	119.3	0.0	103.6	94.0	0.0	41.9	15.5	0.0	58.6	14.5	0.0
LnGrp LOS	F	F		F	F		D	B		E	B	
Approach Vol, veh/h		294			518			1678			1729	
Approach Delay, s/veh		107.7			100.7			17.6			22.2	
Approach LOS		F			F			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		147.7		26.7		147.7		27.9				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		144.0		26.0		144.0		28.0				
Max Q Clear Time (g_c+I1), s		98.2		22.2		135.9		22.8				
Green Ext Time (p_c), s		39.7		0.5		7.9		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay				35.9								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2025) With Project
 Timing Plan: Saturday



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	170	83	726	223	91	729		
Future Volume (veh/h)	170	83	726	223	91	729		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	185	90	789	242	99	792		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	240	214	869	267	120	1409		
Arrive On Green	0.14	0.14	0.63	0.63	0.07	0.76		
Sat Flow, veh/h	1774	1583	1369	420	1774	1863		
Grp Volume(v), veh/h	185	90	0	1031	99	792		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1789	1774	1863		
Q Serve(g_s), s	7.5	3.9	0.0	36.8	4.1	13.3		
Cycle Q Clear(g_c), s	7.5	3.9	0.0	36.8	4.1	13.3		
Prop In Lane	1.00	1.00		0.23	1.00			
Lane Grp Cap(c), veh/h	240	214	0	1136	120	1409		
V/C Ratio(X)	0.77	0.42	0.00	0.91	0.83	0.56		
Avail Cap(c_a), veh/h	383	342	0	1136	120	1409		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	30.9	29.3	0.0	11.6	34.1	3.8		
Incr Delay (d2), s/veh	5.2	1.3	0.0	12.1	35.7	1.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.0	1.8	0.0	21.6	3.2	7.2		
LnGrp Delay(d),s/veh	36.1	30.6	0.0	23.7	69.7	5.4		
LnGrp LOS	D	C		C	E	A		
Approach Vol, veh/h	275		1031		891			
Approach Delay, s/veh	34.3		23.7		12.6			
Approach LOS	C		C		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.0	51.0				60.0		14.0
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	47.0					56.0		16.0
Max Q Clear Time (g_c+I), s	38.8					15.3		9.5
Green Ext Time (p_c), s	0.0	5.8				15.1		0.6
Intersection Summary								
HCM 2010 Ctrl Delay			20.5					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2025) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	93	0	75	0	5	0	50	1916	0	0	1772	102
Future Volume (veh/h)	93	0	75	0	5	0	50	1916	0	0	1772	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	0	0	0	5	0	53	2017	0	0	1865	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	0	136	0	160	136	68	3029	1355	1	2789	1248
Arrive On Green	0.09	0.00	0.00	0.00	0.09	0.00	0.04	0.86	0.00	0.00	0.79	0.00
Sat Flow, veh/h	1365	0	1583	0	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	98	0	0	0	5	0	53	2017	0	0	1865	0
Grp Sat Flow(s),veh/h/ln	1365	0	1583	0	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	0.0	0.0	0.0	0.3	0.0	4.1	26.2	0.0	0.0	32.4	0.0
Cycle Q Clear(g_c), s	9.8	0.0	0.0	0.0	0.3	0.0	4.1	26.2	0.0	0.0	32.4	0.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	0	136	0	160	136	68	3029	1355	1	2789	1248
V/C Ratio(X)	0.58	0.00	0.00	0.00	0.03	0.00	0.78	0.67	0.00	0.00	0.67	0.00
Avail Cap(c_a), veh/h	254	0	231	0	272	231	129	3029	1355	52	2789	1248
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	61.9	0.0	0.0	0.0	57.4	0.0	65.3	3.3	0.0	0.0	6.5	0.0
Incr Delay (d2), s/veh	3.1	0.0	0.0	0.0	0.1	0.0	16.9	1.2	0.0	0.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	0.0	0.2	0.0	2.3	12.8	0.0	0.0	16.0	0.0
LnGrp Delay(d),s/veh	65.0	0.0	0.0	0.0	57.5	0.0	82.2	4.5	0.0	0.0	7.8	0.0
LnGrp LOS	E				E		F	A			A	
Approach Vol, veh/h		98			5			2070			1865	
Approach Delay, s/veh		65.0			57.5			6.5			7.8	
Approach LOS		E			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	121.3		15.8	9.3	112.0		15.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	114.0			20.0	10.0	108.0		20.0				
Max Q Clear Time (g_c+I), s	28.2			11.8	6.1	34.4		2.3				
Green Ext Time (p_c), s	0.0	62.8		0.3	0.0	56.1		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				8.6								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	37	324	22	48	270	63	21	10	49	118	8	17
Future Vol, veh/h	37	324	22	48	270	63	21	10	49	118	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	372	25	55	310	72	24	11	56	136	9	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	383	0	0	398	0	0	941	963	385	961	940	347
Stage 1	-	-	-	-	-	-	470	470	-	457	457	-
Stage 2	-	-	-	-	-	-	471	493	-	504	483	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1175	-	-	1161	-	-	243	256	663	236	264	696
Stage 1	-	-	-	-	-	-	574	560	-	583	568	-
Stage 2	-	-	-	-	-	-	573	547	-	550	553	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1175	-	-	1161	-	-	215	235	663	195	242	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	215	235	-	195	242	-
Stage 1	-	-	-	-	-	-	553	540	-	562	541	-
Stage 2	-	-	-	-	-	-	522	521	-	475	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1	16	49.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	215	507	1175	-	-	1161	-	-	195	435
HCM Lane V/C Ratio	0.112	0.134	0.036	-	-	0.048	-	-	0.696	0.066
HCM Control Delay (s)	23.9	13.2	8.2	-	-	8.3	-	-	57.3	13.9
HCM Lane LOS	C	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.4	0.5	0.1	-	-	0.1	-	-	4.3	0.2

Intersection												
Int Delay, s/veh	2.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	45	353	14	15	274	16	8	1	16	16	7	70
Future Vol, veh/h	45	353	14	15	274	16	8	1	16	16	7	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	392	16	17	304	18	9	1	18	18	8	78

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	322	0	0	408	0	0	889	856	400	856	855	313
Stage 1	-	-	-	-	-	-	500	500	-	347	347	-
Stage 2	-	-	-	-	-	-	389	356	-	509	508	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1238	-	-	1151	-	-	264	295	650	278	296	727
Stage 1	-	-	-	-	-	-	553	543	-	669	635	-
Stage 2	-	-	-	-	-	-	635	629	-	547	539	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1238	-	-	1151	-	-	221	279	650	258	280	727
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	279	-	258	280	-
Stage 1	-	-	-	-	-	-	531	521	-	642	626	-
Stage 2	-	-	-	-	-	-	552	620	-	509	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.4	15	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	388	1238	-	-	1151	-	-	507
HCM Lane V/C Ratio	0.072	0.04	-	-	0.014	-	-	0.204
HCM Control Delay (s)	15	8	-	-	8.2	-	-	13.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.8

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) With Project
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	94	107	273	39	194	38	1412	128	201	2101	29
Future Volume (veh/h)	106	94	107	273	39	194	38	1412	128	201	2101	29
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	100	0	290	41	0	40	1502	0	214	2235	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	220	187	249	324	275	115	1764	789	236	2005	897
Arrive On Green	0.08	0.12	0.00	0.14	0.17	0.00	0.06	0.50	0.00	0.13	0.57	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	100	0	290	41	0	40	1502	0	214	2235	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.4	6.8	0.0	19.0	2.5	0.0	2.9	50.1	0.0	16.1	76.8	0.0
Cycle Q Clear(g_c), s	8.4	6.8	0.0	19.0	2.5	0.0	2.9	50.1	0.0	16.1	76.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	220	187	249	324	275	115	1764	789	236	2005	897
V/C Ratio(X)	0.75	0.45	0.00	1.17	0.13	0.00	0.35	0.85	0.00	0.91	1.11	0.00
Avail Cap(c_a), veh/h	222	330	280	249	357	304	144	1801	806	236	2005	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.7	55.7	0.0	58.3	47.3	0.0	60.7	29.6	0.0	58.0	29.4	0.0
Incr Delay (d2), s/veh	7.9	1.5	0.0	109.6	0.2	0.0	0.7	4.5	0.0	34.4	59.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	3.6	0.0	16.8	1.3	0.0	1.5	25.5	0.0	10.2	53.8	0.0
LnGrp Delay(d),s/veh	68.6	57.2	0.0	167.9	47.5	0.0	61.3	34.1	0.0	92.4	88.7	0.0
LnGrp LOS	E	E		F	D		E	C		F	F	
Approach Vol, veh/h		213			331			1542			2449	
Approach Delay, s/veh		63.2			153.0			34.8			89.0	
Approach LOS		E			F			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	71.6	14.4	27.6	12.8	80.8	22.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	17.0	68.0	16.0	25.0	10.0	75.0	18.0	23.0				
Max Q Clear Time (g_c+I1), s	18.1	52.1	10.4	4.5	4.9	78.8	21.0	8.8				
Green Ext Time (p_c), s	0.0	14.5	0.2	0.5	0.0	0.0	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			74.0									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	46	104	339	59	234	37	1569	111	124	1839	20
Future Volume (veh/h)	84	46	104	339	59	234	37	1569	111	124	1839	20
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	90	49	0	365	63	0	40	1687	0	133	1977	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	84	72	335	312	265	285	2224	995	186	1848	827
Arrive On Green	0.07	0.05	0.00	0.19	0.17	0.00	0.16	0.63	0.00	0.11	1.00	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	90	49	0	365	63	0	40	1687	0	133	1977	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	9.0	4.6	0.0	34.0	5.2	0.0	3.5	60.9	0.0	6.7	94.0	0.0
Cycle Q Clear(g_c), s	9.0	4.6	0.0	34.0	5.2	0.0	3.5	60.9	0.0	6.7	94.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	84	72	335	312	265	285	2224	995	186	1848	827
V/C Ratio(X)	0.76	0.58	0.00	1.09	0.20	0.00	0.14	0.76	0.00	0.71	1.07	0.00
Avail Cap(c_a), veh/h	168	269	229	335	445	378	285	2224	995	210	1848	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.50	0.50	0.00	0.51	0.51	0.00
Uniform Delay (d), s/veh	82.6	84.3	0.0	73.0	64.5	0.0	64.9	23.7	0.0	78.9	0.0	0.0
Incr Delay (d2), s/veh	12.2	8.8	0.0	75.2	0.4	0.0	0.0	1.3	0.0	3.9	37.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	2.6	0.0	23.7	2.8	0.0	1.7	29.9	0.0	3.3	9.7	0.0
LnGrp Delay(d),s/veh	94.8	93.1	0.0	148.2	65.0	0.0	64.9	25.0	0.0	82.8	37.7	0.0
LnGrp LOS	F	F		F	E		E	C		F	F	
Approach Vol, veh/h		139			428			1727			2110	
Approach Delay, s/veh		94.2			135.9			25.9			40.6	
Approach LOS		F			F			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.7	117.1	15.0	34.2	32.9	98.0	37.0	12.1				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	10.0	93.0	16.0	42.0	10.0	93.0	33.0	25.0				
Max Q Clear Time (g_c+I), s	10.0	62.9	11.0	7.2	5.5	96.0	36.0	6.6				
Green Ext Time (p_c), s	0.0	21.4	0.1	0.6	4.1	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				45.8								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) With Project
Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	237	3	549	8	1	21	650	1342	5	2	1439	165
Future Volume (veh/h)	237	3	549	8	1	21	650	1342	5	2	1439	165
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	0	0	9	1	23	699	1443	0	2	1547	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	0	264	95	4	82	704	2359	1020	4	1643	735
Arrive On Green	0.10	0.00	0.00	0.05	0.05	0.03	0.41	1.00	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3548	0	3167	1774	66	1527	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	257	0	0	9	0	24	699	1443	0	2	1547	0
Grp Sat Flow(s),veh/h/ln	774	0	1583	1774	0	1593	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.3	0.0	0.0	0.4	0.0	1.3	18.2	0.0	0.0	0.1	37.4	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	0.4	0.0	1.3	18.2	0.0	0.0	0.1	37.4	0.0
Prop In Lane	1.00		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	0	264	95	0	85	704	2359	1020	4	1643	735
V/C Ratio(X)	0.72	0.00	0.00	0.09	0.00	0.28	0.99	0.61	0.00	0.52	0.94	0.00
Avail Cap(c_a), veh/h	355	0	264	138	0	124	704	2359	1020	79	1643	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.00	1.00	0.00	1.00	0.56	0.56	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.3	0.0	0.0	40.5	0.0	41.9	26.5	0.0	0.0	44.9	22.9	0.0
Incr Delay (d2), s/veh	6.7	0.0	0.0	0.4	0.0	1.8	23.7	0.7	0.0	35.0	12.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	0.2	0.0	0.6	10.9	0.2	0.0	0.1	21.0	0.0
LnGrp Delay(d),s/veh	45.9	0.0	0.0	41.0	0.0	43.7	50.2	0.7	0.0	79.9	35.0	0.0
LnGrp LOS	D			D			D	D	A		E	C
Approach Vol, veh/h		257			33			2142			1549	
Approach Delay, s/veh		45.9			42.9			16.8			35.1	
Approach LOS		D			D			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.2	64.0		8.8	22.4	45.8		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	52.0			5.0	17.9	37.6		7.0				
Max Q Clear Time (g_c+I), s	2.0			3.3	20.2	39.4		8.3				
Green Ext Time (p_c), s	0.0	43.3		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				26.0								
HCM 2010 LOS				C								
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) With Project
 Timing Plan: AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	432	292	93	596	709	284		
Future Volume (veh/h)	432	292	93	596	709	284		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	450	0	97	621	739	296		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	848	720	148	2141	901	375		
Arrive On Green	0.45	0.00	0.08	0.60	0.26	0.24		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	450	0	97	621	739	296		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	10.4	0.0	3.2	5.0	12.1	10.5		
Cycle Q Clear(g_c), s	10.4	0.0	3.2	5.0	12.1	10.5		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	848	720	148	2141	901	375		
V/C Ratio(X)	0.53	0.00	0.66	0.29	0.82	0.79		
Avail Cap(c_a), veh/h	848	720	148	2141	906	377		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.47	0.47	1.00	1.00		
Uniform Delay (d), s/veh	11.8	0.0	26.7	5.7	20.8	21.5		
Incr Delay (d2), s/veh	2.4	0.0	3.9	0.2	5.6	9.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	11.8	0.0	1.7	2.5	6.5	5.6		
LnGrp Delay(d),s/veh	14.1	0.0	30.6	5.8	26.5	31.4		
LnGrp LOS	B		C	A	C	C		
Approach Vol, veh/h	450			718	1035			
Approach Delay, s/veh	14.1			9.2	27.9			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.0	31.3				40.3		19.7
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	25.7					34.7		14.3
Max Q Clear Time (g_c+I_T), s	12.4					7.0		14.1
Green Ext Time (p_c), s	0.0	7.5				11.6		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			19.0					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) With Project
Timing Plan: AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	309	217	191	1641	2319	456		
Future Volume (veh/h)	309	217	191	1641	2319	456		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	329	0	203	1746	2467	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	308	274	189	2737	2265	1013		
Arrive On Green	0.17	0.00	0.11	0.77	0.64	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	329	0	203	1746	2467	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	26.0	0.0	16.0	33.1	96.0	0.0		
Cycle Q Clear(g_c), s	26.0	0.0	16.0	33.1	96.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	308	274	189	2737	2265	1013		
V/C Ratio(X)	1.07	0.00	1.07	0.64	1.09	0.00		
Avail Cap(c_a), veh/h	308	274	189	2737	2265	1013		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	62.0	0.0	67.0	7.6	27.0	0.0		
Incr Delay (d2), s/veh	71.1	0.0	86.1	1.2	48.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	13.8	0.0	12.4	16.4	61.7	0.0		
LnGrp Delay(d),s/veh	133.1	0.0	153.1	8.8	75.2	0.0		
LnGrp LOS	F		F	A	F			
Approach Vol, veh/h	329			1949	2467			
Approach Delay, s/veh	133.1			23.8	75.2			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		120.0		30.0	20.0	100.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		116.0		26.0	16.0	96.0		
Max Q Clear Time (g_c+l1), s		35.1		28.0	18.0	98.0		
Green Ext Time (p_c), s		67.5		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			58.1					
HCM 2010 LOS			E					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	96	293	156	103	110	120	1543	142	103	2354	107
Future Volume (veh/h)	58	96	293	156	103	110	120	1543	142	103	2354	107
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	61	104	0	170	112	0	126	1624	0	112	2478	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	135	115	273	148	125	95	2465	1103	155	2436	1090
Arrive On Green	0.07	0.07	0.00	0.08	0.08	0.00	0.05	0.70	0.00	0.05	0.69	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	61	104	0	170	112	0	126	1624	0	112	2478	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	5.0	8.2	0.0	7.2	8.8	0.0	8.0	38.6	0.0	4.8	103.2	0.0
Cycle Q Clear(g_c), s	5.0	8.2	0.0	7.2	8.8	0.0	8.0	38.6	0.0	4.8	103.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	129	135	115	273	148	125	95	2465	1103	155	2436	1090
V/C Ratio(X)	0.47	0.77	0.00	0.62	0.76	0.00	1.33	0.66	0.00	0.72	1.02	0.00
Avail Cap(c_a), veh/h	308	323	274	597	323	274	95	2465	1103	161	2436	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.8	68.3	0.0	66.9	67.6	0.0	71.0	12.8	0.0	70.7	23.4	0.0
Incr Delay (d2), s/veh	2.7	8.9	0.0	2.3	7.7	0.0	204.9	1.4	0.0	14.2	22.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	4.6	0.0	3.5	4.9	0.0	9.3	19.2	0.0	2.6	57.4	0.0
LnGrp Delay(d),s/veh	69.5	77.2	0.0	69.2	75.4	0.0	275.9	14.2	0.0	84.9	46.1	0.0
LnGrp LOS	E	E		E	E		F	B		F	F	
Approach Vol, veh/h		165			282			1750			2590	
Approach Delay, s/veh		74.4			71.7			33.0			47.7	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	108.5		14.9	12.0	107.2		15.9				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	75.0			26.0	8.0	74.0		26.0				
Max Q Clear Time (g_c+I), s	40.6			10.2	10.0	105.2		10.8				
Green Ext Time (p_c), s	0.0	31.3		0.7	0.0	0.0		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			44.7									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) With Project
 Timing Plan: AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	156	75	758	158	60	566		
Future Volume (veh/h)	156	75	758	158	60	566		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	170	82	824	172	65	615		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	220	197	1016	212	83	1445		
Arrive On Green	0.12	0.12	0.68	0.68	0.05	0.78		
Sat Flow, veh/h	1774	1583	1495	312	1774	1863		
Grp Volume(v), veh/h	170	82	0	996	65	615		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1808	1774	1863		
Q Serve(g_s), s	7.4	3.8	0.0	31.5	2.9	8.8		
Cycle Q Clear(g_c), s	7.4	3.8	0.0	31.5	2.9	8.8		
Prop In Lane	1.00	1.00		0.17	1.00			
Lane Grp Cap(c), veh/h	220	197	0	1228	83	1445		
V/C Ratio(X)	0.77	0.42	0.00	0.81	0.78	0.43		
Avail Cap(c_a), veh/h	355	317	0	1228	89	1445		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	33.9	32.4	0.0	9.2	37.7	3.0		
Incr Delay (d2), s/veh	5.7	1.4	0.0	5.9	33.7	0.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.0	1.7	0.0	17.5	2.2	4.8		
LnGrp Delay(d),s/veh	39.6	33.8	0.0	15.1	71.5	3.9		
LnGrp LOS	D	C		B	E	A		
Approach Vol, veh/h	252		996			680		
Approach Delay, s/veh	37.7		15.1			10.4		
Approach LOS	D		B			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.7	58.3				66.1		13.9
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	48.0					56.0		16.0
Max Q Clear Time (g_c+1), s	33.5					10.8		9.4
Green Ext Time (p_c), s	0.0	7.8				12.3		0.5
Intersection Summary								
HCM 2010 Ctrl Delay			16.4					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2032) With Project
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	52	75	139	155	15	60	47	1688	285	120	2637	81
Future Volume (veh/h)	52	75	139	155	15	60	47	1688	285	120	2637	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	55	82	0	168	16	65	49	1777	310	130	2776	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	44	251	179	12	251	59	2313	1035	156	2507	1122
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.16	0.03	0.65	0.65	0.09	0.71	0.00
Sat Flow, veh/h	0	281	1583	770	73	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	137	0	0	184	0	65	49	1777	310	130	2776	0
Grp Sat Flow(s),veh/h/ln	281	0	1583	843	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	4.3	3.3	41.9	10.1	8.7	85.0	0.0
Cycle Q Clear(g_c), s	19.0	0.0	0.0	19.0	0.0	4.3	3.3	41.9	10.1	8.7	85.0	0.0
Prop In Lane	0.40		1.00	0.91		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	87	0	251	191	0	251	59	2313	1035	156	2507	1122
V/C Ratio(X)	1.58	0.00	0.00	0.96	0.00	0.26	0.83	0.77	0.30	0.83	1.11	0.00
Avail Cap(c_a), veh/h	87	0	251	191	0	251	59	2313	1035	192	2507	1122
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.0	0.0	0.0	53.1	0.0	44.3	57.7	14.5	9.0	53.8	17.5	0.0
Incr Delay (d2), s/veh	310.2	0.0	0.0	54.6	0.0	0.5	60.4	2.5	0.7	21.8	54.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	0.0	9.0	0.0	1.9	2.6	21.0	4.6	5.2	59.8	0.0
LnGrp Delay(d),s/veh	361.2	0.0	0.0	107.7	0.0	44.9	118.0	17.0	9.7	75.6	72.3	0.0
LnGrp LOS	F			F		D	F	B	A	E	F	
Approach Vol, veh/h		137			249			2136			2906	
Approach Delay, s/veh		361.2			91.3			18.2			72.5	
Approach LOS		F			F			B			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	64.6	82.4		23.0	8.0	89.0		23.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	76.0	76.0		19.0	4.0	85.0		19.0				
Max Q Clear Time (g_c+I1), s	43.9	43.9		21.0	5.3	87.0		21.0				
Green Ext Time (p_c), s	0.1	31.0		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				59.3								
HCM 2010 LOS				E								

Intersection

Int Delay, s/veh 8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	212	22	41	211	73	22	8	59	181	8	15
Future Vol, veh/h	28	212	22	41	211	73	22	8	59	181	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	223	23	43	222	77	23	8	62	191	8	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	246	0	0	653	679	235	676	652	261
Stage 1	-	-	-	-	-	-	294	294	-	347	347	-
Stage 2	-	-	-	-	-	-	359	385	-	329	305	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1262	-	-	1320	-	-	380	374	804	367	387	778
Stage 1	-	-	-	-	-	-	714	670	-	669	635	-
Stage 2	-	-	-	-	-	-	659	611	-	684	662	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1262	-	-	1320	-	-	350	354	804	319	366	778
Mov Cap-2 Maneuver	-	-	-	-	-	-	350	354	-	319	366	-
Stage 1	-	-	-	-	-	-	698	655	-	654	614	-
Stage 2	-	-	-	-	-	-	616	591	-	609	647	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1	12	29.4
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	350	698	1262	-	-	1320	-	-	319	559
HCM Lane V/C Ratio	0.066	0.101	0.023	-	-	0.033	-	-	0.597	0.043
HCM Control Delay (s)	16	10.7	7.9	-	-	7.8	-	-	31.7	11.7
HCM Lane LOS	C	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	3.6	0.1

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	220	11	12	229	10	14	0	12	15	0	56
Future Vol, veh/h	43	220	11	12	229	10	14	0	12	15	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	244	12	13	254	11	16	0	13	17	0	62

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	257	0	0	664	638	251	640	639	260
Stage 1	-	-	-	-	-	-	346	346	-	287	287	-
Stage 2	-	-	-	-	-	-	318	292	-	353	352	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1298	-	-	1308	-	-	374	394	788	388	394	779
Stage 1	-	-	-	-	-	-	670	635	-	720	674	-
Stage 2	-	-	-	-	-	-	693	671	-	664	632	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1298	-	-	1308	-	-	332	376	788	368	376	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	376	-	368	376	-
Stage 1	-	-	-	-	-	-	645	612	-	693	667	-
Stage 2	-	-	-	-	-	-	631	664	-	629	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	13.5	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	453	1298	-	-	1308	-	-	630
HCM Lane V/C Ratio	0.064	0.037	-	-	0.01	-	-	0.125
HCM Control Delay (s)	13.5	7.9	-	-	7.8	-	-	11.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.4

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) With Project
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	61	98	232	56	198	82	2436	189	158	2331	85
Future Volume (veh/h)	75	61	98	232	56	198	82	2436	189	158	2331	85
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	77	63	0	239	58	0	85	2511	0	163	2403	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	205	175	171	272	231	131	2099	939	171	2180	975
Arrive On Green	0.06	0.11	0.00	0.10	0.15	0.00	0.07	0.59	0.00	0.10	0.62	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	77	63	0	239	58	0	85	2511	0	163	2403	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.2	4.5	0.0	14.0	4.0	0.0	6.8	86.0	0.0	13.3	89.3	0.0
Cycle Q Clear(g_c), s	6.2	4.5	0.0	14.0	4.0	0.0	6.8	86.0	0.0	13.3	89.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	205	175	171	272	231	131	2099	939	171	2180	975
V/C Ratio(X)	0.71	0.31	0.00	1.40	0.21	0.00	0.65	1.20	0.00	0.95	1.10	0.00
Avail Cap(c_a), veh/h	147	308	262	171	334	284	135	2099	939	171	2180	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.24	0.24	0.00
Uniform Delay (d), s/veh	66.8	59.4	0.0	65.5	54.6	0.0	65.3	29.5	0.0	65.2	27.8	0.0
Incr Delay (d2), s/veh	9.7	0.8	0.0	209.4	0.4	0.0	7.9	93.2	0.0	22.3	48.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.4	0.0	16.8	2.1	0.0	3.6	68.9	0.0	7.6	57.8	0.0
LnGrp Delay(d),s/veh	76.5	60.2	0.0	274.9	55.0	0.0	73.2	122.7	0.0	87.5	75.8	0.0
LnGrp LOS	E	E		F	D		E	F		F	F	
Approach Vol, veh/h		140			297			2596			2566	
Approach Delay, s/veh		69.2			232.0			121.1			76.6	
Approach LOS		E			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	90.0	11.9	25.1	14.7	93.3	17.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	13.0	77.0	11.0	25.0	10.0	80.0	13.0	23.0				
Max Q Clear Time (g_c+I1), s	15.3	88.0	8.2	6.0	8.8	91.3	16.0	6.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			105.3									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	80	74	249	51	141	72	2321	237	288	2269	65
Future Volume (veh/h)	31	80	74	249	51	141	72	2321	237	288	2269	65
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	32	82	0	257	53	0	74	2393	0	297	2339	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	124	105	229	193	164	225	2478	1109	252	2289	1024
Arrive On Green	0.03	0.07	0.00	0.07	0.10	0.00	0.13	0.70	0.00	0.15	1.00	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	32	82	0	257	53	0	74	2393	0	297	2339	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	2.7	6.4	0.0	10.0	3.9	0.0	5.7	93.9	0.0	11.0	0.0	0.0
Cycle Q Clear(g_c), s	2.7	6.4	0.0	10.0	3.9	0.0	5.7	93.9	0.0	11.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	53	124	105	229	193	164	225	2478	1109	252	2289	1024
V/C Ratio(X)	0.61	0.66	0.00	1.12	0.27	0.00	0.33	0.97	0.00	1.18	1.02	0.00
Avail Cap(c_a), veh/h	71	286	243	229	335	285	225	2478	1109	252	2289	1024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.09	0.09	0.00	0.17	0.17	0.00
Uniform Delay (d), s/veh	71.9	68.4	0.0	70.0	62.0	0.0	59.7	20.8	0.0	64.0	0.0	0.0
Incr Delay (d2), s/veh	10.9	8.3	0.0	95.5	1.1	0.0	0.0	1.7	0.0	86.9	14.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.6	0.0	7.8	2.1	0.0	2.8	45.8	0.0	8.2	4.5	0.0
LnGrp Delay(d),s/veh	82.8	76.7	0.0	165.5	63.1	0.0	59.7	22.5	0.0	150.9	14.2	0.0
LnGrp LOS	F	E		F	E		E	C		F	F	
Approach Vol, veh/h		114			310			2467			2636	
Approach Delay, s/veh		78.4			148.0			23.6			29.6	
Approach LOS		E			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	109.0	7.4	18.5	23.0	101.0	13.0	13.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	91.0	5.0	26.0	5.0	96.0	9.0	22.0				
Max Q Clear Time (g_c+I), s	10.0	95.9	4.7	5.9	7.7	2.0	12.0	8.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6	0.0	71.8	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				34.5								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) With Project
 Timing Plan: PM Peak Hour

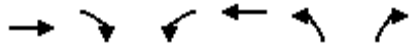


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	234	2	687	27	17	41	703	1819	18	5	1935	286
Future Volume (veh/h)	234	2	687	27	17	41	703	1819	18	5	1935	286
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	247	0	0	28	18	43	740	1915	0	5	2037	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	343	0	275	83	23	54	691	2636	1158	9	1944	870
Arrive On Green	0.10	0.00	0.00	0.05	0.05	0.03	0.40	1.00	0.00	0.01	0.55	0.00
Sat Flow, veh/h	3548	0	3167	1774	489	1168	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	247	0	0	28	0	61	740	1915	0	5	2037	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1657	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	10.1	0.0	0.0	2.3	0.0	5.5	30.1	0.0	0.0	0.4	82.4	0.0
Cycle Q Clear(g_c), s	10.1	0.0	0.0	2.3	0.0	5.5	30.1	0.0	0.0	0.4	82.4	0.0
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	343	0	275	83	0	77	691	2636	1158	9	1944	870
V/C Ratio(X)	0.72	0.00	0.00	0.34	0.00	0.79	1.07	0.73	0.00	0.56	1.05	0.00
Avail Cap(c_a), veh/h	426	0	348	83	0	77	691	2636	1158	47	1944	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.00	0.00	1.00	0.00	1.00	0.17	0.17	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	65.8	0.0	0.0	69.3	0.0	71.5	44.9	0.0	0.0	74.5	33.8	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.0	2.4	0.0	40.8	37.9	0.3	0.0	19.0	34.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	0.0	1.2	0.0	3.4	17.8	0.1	0.0	0.3	49.2	0.0
LnGrp Delay(d),s/veh	69.2	0.0	0.0	71.6	0.0	112.2	82.8	0.3	0.0	93.5	68.1	0.0
LnGrp LOS	E			E		F	F	A		F	F	
Approach Vol, veh/h		247			89			2655			2042	
Approach Delay, s/veh		69.2			99.5			23.3			68.1	
Approach LOS		E			F			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	115.7		11.0	34.1	86.4		18.5				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.5	6.0		6.0				
Max Green Setting (Gmax), s	103.0			5.0	29.6	76.9		16.0				
Max Q Clear Time (g_c+I), s	2.0			7.5	32.1	84.4		12.1				
Green Ext Time (p_c), s	0.0	95.9		0.0	0.0	0.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			45.1									
HCM 2010 LOS			D									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↑	↑	↑↑	↑↑	↑		
Traffic Volume (veh/h)	636	545	190	651	560	271		
Future Volume (veh/h)	636	545	190	651	560	271		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	656	0	196	671	577	279		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	838	712	237	2300	746	303		
Arrive On Green	0.45	0.00	0.13	0.65	0.22	0.19		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	656	0	196	671	577	279		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	17.9	0.0	6.5	4.9	9.5	10.4		
Cycle Q Clear(g_c), s	17.9	0.0	6.5	4.9	9.5	10.4		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	838	712	237	2300	746	303		
V/C Ratio(X)	0.78	0.00	0.83	0.29	0.77	0.92		
Avail Cap(c_a), veh/h	838	712	237	2300	746	303		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.44	0.44	1.00	1.00		
Uniform Delay (d), s/veh	14.0	0.0	25.3	4.5	22.1	23.8		
Incr Delay (d2), s/veh	7.2	0.0	9.9	0.1	4.6	31.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.8	0.0	3.8	2.4	5.0	7.2		
LnGrp Delay(d),s/veh	21.2	0.0	35.2	4.7	26.7	54.8		
LnGrp LOS	C		D	A	C	D		
Approach Vol, veh/h	656			867	856			
Approach Delay, s/veh	21.2			11.6	35.9			
Approach LOS	C			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.0	31.0				43.0		17.0
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	25.5					37.5		11.5
Max Q Clear Time (g_c+I), s	19.9					6.9		12.4
Green Ext Time (p_c), s	0.0	4.3				15.9		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			23.0					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	482	387	303	2452	2213	544		
Future Volume (veh/h)	482	387	303	2452	2213	544		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	487	0	306	2477	2235	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	418	373	253	2503	1896	848		
Arrive On Green	0.24	0.00	0.14	0.71	0.54	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	487	0	306	2477	2235	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	33.0	0.0	20.0	95.6	75.0	0.0		
Cycle Q Clear(g_c), s	33.0	0.0	20.0	95.6	75.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	418	373	253	2503	1896	848		
V/C Ratio(X)	1.16	0.00	1.21	0.99	1.18	0.00		
Avail Cap(c_a), veh/h	418	373	253	2503	1896	848		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	53.5	0.0	60.0	20.0	32.5	0.0		
Incr Delay (d2), s/veh	97.3	0.0	124.4	15.7	86.3	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	17.4	0.0	18.5	51.6	59.1	0.0		
LnGrp Delay(d),s/veh	150.8	0.0	184.4	35.7	118.8	0.0		
LnGrp LOS	F		F	D	F			
Approach Vol, veh/h	487			2783	2235			
Approach Delay, s/veh	150.8			52.1	118.8			
Approach LOS	F			D	F			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		103.0		37.0	24.0	79.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		99.0		33.0	20.0	75.0		
Max Q Clear Time (g_c+l1), s		97.6		35.0	22.0	77.0		
Green Ext Time (p_c), s		1.4		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			87.9					
HCM 2010 LOS			F					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	314	208	586	313	441	151	2262	566	433	2151	126
Future Volume (veh/h)	92	314	208	586	313	441	151	2262	566	433	2151	126
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	96	341	0	637	340	0	157	2356	0	471	2241	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.96	0.92	0.96	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	323	274	597	323	274	106	1628	728	298	1722	771
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.00	0.06	0.46	0.00	0.09	0.49	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	96	341	0	637	340	0	157	2356	0	471	2241	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Q Serve(g_s), s	7.1	26.0	0.0	26.0	26.0	0.0	9.0	69.0	0.0	13.0	73.0	0.0
Cycle Q Clear(g_c), s	7.1	26.0	0.0	26.0	26.0	0.0	9.0	69.0	0.0	13.0	73.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	323	274	597	323	274	106	1628	728	298	1722	771
V/C Ratio(X)	0.31	1.06	0.00	1.07	1.05	0.00	1.47	1.45	0.00	1.58	1.30	0.00
Avail Cap(c_a), veh/h	308	323	274	597	323	274	106	1628	728	298	1722	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.2	62.0	0.0	62.0	62.0	0.0	70.5	40.5	0.0	68.5	38.5	0.0
Incr Delay (d2), s/veh	0.6	65.6	0.0	56.3	64.7	0.0	257.4	204.7	0.0	276.1	139.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	19.2	0.0	17.0	19.2	0.0	12.0	80.0	0.0	17.6	69.1	0.0
LnGrp Delay(d),s/veh	54.8	127.6	0.0	118.3	126.7	0.0	327.9	245.2	0.0	344.6	178.4	0.0
LnGrp LOS	D	F		F	F		F	F		F	F	
Approach Vol, veh/h		437			977			2513			2712	
Approach Delay, s/veh		111.6			121.2			250.4			207.2	
Approach LOS		F			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	73.0		30.0	13.0	77.0		30.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	7.0	69.0		26.0	9.0	73.0		26.0				
Max Q Clear Time (g_c+I1), s	7.0	71.0		28.0	11.0	75.0		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				204.6								
HCM 2010 LOS				F								

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	240	138	912	329	140	958		
Future Volume (veh/h)	240	138	912	329	140	958		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	242	139	921	332	141	968		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	237	211	894	322	148	1490		
Arrive On Green	0.13	0.13	0.68	0.68	0.08	0.80		
Sat Flow, veh/h	1774	1583	1308	472	1774	1863		
Grp Volume(v), veh/h	242	139	0	1253	141	968		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1780	1774	1863		
Q Serve(g_s), s	16.0	10.0	0.0	82.0	9.5	26.0		
Cycle Q Clear(g_c), s	16.0	10.0	0.0	82.0	9.5	26.0		
Prop In Lane	1.00	1.00		0.26	1.00			
Lane Grp Cap(c), veh/h	237	211	0	1216	148	1490		
V/C Ratio(X)	1.02	0.66	0.00	1.03	0.95	0.65		
Avail Cap(c_a), veh/h	237	211	0	1216	148	1490		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	52.0	49.4	0.0	19.0	54.8	5.0		
Incr Delay (d2), s/veh	64.6	7.3	0.0	33.9	60.0	2.2		
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	12.1	4.8	0.0	51.0	7.1	13.8		
LnGrp Delay(d),s/veh	116.7	56.7	0.0	52.9	114.8	7.2		
LnGrp LOS	F	E		F	F	A		
Approach Vol, veh/h	381		1253			1109		
Approach Delay, s/veh	94.8		52.9			20.9		
Approach LOS	F		D			C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	64.0	86.0				100.0		20.0
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	10.0	82.0				96.0		16.0
Max Q Clear Time (g_c+I1),s	10.0	84.0				28.0		18.0
Green Ext Time (p_c), s	0.0	0.0				29.0		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			45.8					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2032) With Project
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	122	15	107	80	15	30	64	2834	65	25	2747	161
Future Volume (veh/h)	122	15	107	80	15	30	64	2834	65	25	2747	161
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	124	16	0	87	16	33	65	2892	71	27	2803	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.92	0.98	0.92	0.92	0.92	0.98	0.98	0.92	0.92	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	10	192	219	32	192	63	2738	1225	34	2680	1199
Arrive On Green	0.12	0.12	0.00	0.12	0.12	0.12	0.04	0.77	0.77	0.02	0.76	0.00
Sat Flow, veh/h	652	84	1583	1414	266	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	140	0	0	103	0	33	65	2892	71	27	2803	0
Grp Sat Flow(s),veh/h/ln	736	0	1583	1680	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.0	0.0	0.0	0.0	0.0	2.6	5.0	108.3	1.5	2.1	106.0	0.0
Cycle Q Clear(g_c), s	17.0	0.0	0.0	8.0	0.0	2.6	5.0	108.3	1.5	2.1	106.0	0.0
Prop In Lane	0.89		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	192	251	0	192	63	2738	1225	34	2680	1199
V/C Ratio(X)	1.02	0.00	0.00	0.41	0.00	0.17	1.03	1.06	0.06	0.80	1.05	0.00
Avail Cap(c_a), veh/h	138	0	192	251	0	192	63	2738	1225	51	2680	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.1	0.0	0.0	57.6	0.0	55.2	67.5	15.8	3.8	68.4	17.0	0.0
Incr Delay (d2), s/veh	80.9	0.0	0.0	1.1	0.0	0.4	120.5	34.3	0.0	38.7	30.9	0.0
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.4	0.0	0.0	3.8	0.0	1.2	4.6	64.8	0.7	1.4	62.1	0.0
LnGrp Delay(d),s/veh	148.1	0.0	0.0	58.6	0.0	55.6	188.3	50.2	3.8	107.1	47.9	0.0
LnGrp LOS	F			E		E	F	F	A	F	F	
Approach Vol, veh/h		140			136			3028			2830	
Approach Delay, s/veh		148.1			57.9			52.1			48.5	
Approach LOS		F			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	112.3			21.0	9.0	110.0		21.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	107.0			17.0	5.0	106.0		17.0				
Max Q Clear Time (g_c+1), s	110.3			19.0	7.0	108.0		10.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay				52.7								
HCM 2010 LOS				D								

Intersection

Int Delay, s/veh 30.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	48	437	31	79	426	140	20	8	58	118	12	18
Future Vol, veh/h	48	437	31	79	426	140	20	8	58	118	12	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	486	34	88	473	156	22	9	64	131	13	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	520	0	0	1352	1413	503	1373	1354	551
Stage 1	-	-	-	-	-	-	609	609	-	727	727	-
Stage 2	-	-	-	-	-	-	743	804	-	646	627	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	953	-	-	1046	-	-	127	138	569	-	123	150
Stage 1	-	-	-	-	-	-	482	485	-	415	429	-
Stage 2	-	-	-	-	-	-	407	396	-	460	476	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	953	-	-	1046	-	-	101	119	569	-	92	130
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	119	-	-	92	130
Stage 1	-	-	-	-	-	-	455	458	-	392	393	-
Stage 2	-	-	-	-	-	-	347	363	-	378	450	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.1	24.3	263.5
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	101	390	953	-	-	1046	-	-	92	238
HCM Lane V/C Ratio	0.22	0.188	0.056	-	-	0.084	-	-	1.425	0.14
HCM Control Delay (s)	50.4	16.4	9	-	-	8.8	-	-	324.8	22.6
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.8	0.7	0.2	-	-	0.3	-	-	9.9	0.5

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	2.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	79	475	14	24	416	24	5	0	20	22	0	51
Future Vol, veh/h	79	475	14	24	416	24	5	0	20	22	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	528	16	27	462	27	6	0	22	24	0	57

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	489	0	0	543	0	0	1268	1253	536	1251	1248	476
Stage 1	-	-	-	-	-	-	711	711	-	529	529	-
Stage 2	-	-	-	-	-	-	557	542	-	722	719	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1074	-	-	1026	-	-	145	172	545	149	173	589
Stage 1	-	-	-	-	-	-	424	436	-	533	527	-
Stage 2	-	-	-	-	-	-	515	520	-	418	433	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1074	-	-	1026	-	-	120	154	545	131	155	589
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	154	-	131	155	-
Stage 1	-	-	-	-	-	-	389	400	-	489	513	-
Stage 2	-	-	-	-	-	-	453	506	-	368	398	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	17.4	22.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	319	1074	-	-	1026	-	-	287
HCM Lane V/C Ratio	0.087	0.082	-	-	0.026	-	-	0.283
HCM Control Delay (s)	17.4	8.7	-	-	8.6	-	-	22.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-	-	1.1

HCM 2010 Signalized Intersection Summary
 1: PIILANI HIGHWAY & OHUKAI STREET

Future (2032) With Project
 Timing Plan: Saturday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	92	79	274	75	221	79	1882	221	251	1762	60
Future Volume (veh/h)	66	92	79	274	75	221	79	1882	221	251	1762	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	95	0	282	77	0	81	1940	0	259	1816	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	218	185	246	372	316	137	1783	797	233	1975	884
Arrive On Green	0.06	0.12	0.00	0.14	0.20	0.00	0.08	0.50	0.00	0.13	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	68	95	0	282	77	0	81	1940	0	259	1816	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.2	6.5	0.0	19.0	4.7	0.0	6.1	69.0	0.0	18.0	63.8	0.0
Cycle Q Clear(g_c), s	5.2	6.5	0.0	19.0	4.7	0.0	6.1	69.0	0.0	18.0	63.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	99	218	185	246	372	316	137	1783	797	233	1975	884
V/C Ratio(X)	0.69	0.44	0.00	1.15	0.21	0.00	0.59	1.09	0.00	1.11	0.92	0.00
Avail Cap(c_a), veh/h	155	326	277	246	422	358	142	1783	797	233	1975	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	63.5	56.3	0.0	59.0	45.8	0.0	61.2	34.0	0.0	59.5	27.5	0.0
Incr Delay (d2), s/veh	8.1	1.4	0.0	102.6	0.3	0.0	3.9	49.7	0.0	92.0	7.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.4	0.0	16.3	2.5	0.0	3.1	45.7	0.0	14.8	33.2	0.0
LnGrp Delay(d),s/veh	71.6	57.7	0.0	161.6	46.1	0.0	65.0	83.7	0.0	151.5	35.3	0.0
LnGrp LOS	E	E		F	D		E	F		F	D	
Approach Vol, veh/h		163			359			2021			2075	
Approach Delay, s/veh		63.5			136.8			83.0			49.8	
Approach LOS		E			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	73.0	10.7	31.3	14.5	80.5	22.0	20.0				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	17.0	68.0	11.0	30.0	10.0	75.0	18.0	23.0				
Max Q Clear Time (g_c+I1), s	20.0	71.0	7.2	6.7	8.1	65.8	21.0	8.5				
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.0	9.2	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			71.5									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: PIILANI HIGHWAY & UWAPO ROAD/KAIWAHINE STREET

Future (2032) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	32	90	105	22	137	80	1916	175	56	1909	28
Future Volume (veh/h)	33	32	90	105	22	137	80	1916	175	56	1909	28
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	34	33	0	107	22	0	82	1955	0	57	1948	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	104	88	172	133	113	416	2458	1100	171	1805	807
Arrive On Green	0.03	0.06	0.00	0.05	0.07	0.00	0.23	0.69	0.00	0.05	0.51	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	34	33	0	107	22	0	82	1955	0	57	1948	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	1.9	1.7	0.0	3.0	1.1	0.0	3.7	37.7	0.0	1.6	51.0	0.0
Cycle Q Clear(g_c), s	1.9	1.7	0.0	3.0	1.1	0.0	3.7	37.7	0.0	1.6	51.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	104	88	172	133	113	416	2458	1100	171	1805	807
V/C Ratio(X)	0.56	0.32	0.00	0.62	0.17	0.00	0.20	0.80	0.00	0.33	1.08	0.00
Avail Cap(c_a), veh/h	106	428	364	172	410	348	416	2458	1100	206	1805	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.09	0.09	0.00	0.60	0.60	0.00
Uniform Delay (d), s/veh	47.5	45.4	0.0	46.6	43.6	0.0	30.7	10.4	0.0	45.9	24.5	0.0
Incr Delay (d2), s/veh	7.7	2.5	0.0	6.7	0.8	0.0	0.0	0.3	0.0	0.3	42.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.0	0.0	1.6	0.6	0.0	1.8	18.3	0.0	0.8	35.2	0.0
LnGrp Delay(d),s/veh	55.2	47.8	0.0	53.3	44.5	0.0	30.7	10.7	0.0	46.2	67.0	0.0
LnGrp LOS	E	D		D	D		C	B		D	F	
Approach Vol, veh/h		67			129			2037			2005	
Approach Delay, s/veh		51.6			51.8			11.5			66.4	
Approach LOS		D			D			B			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	73.4	6.4	11.1	27.4	55.0	8.0	9.6				
Change Period (Y+Rc), s	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	50.0	50.0	5.0	21.0	5.0	50.0	4.0	22.0				
Max Q Clear Time (g_c+I), s	39.7	39.7	3.9	3.1	5.7	53.0	5.0	3.7				
Green Ext Time (p_c), s	0.0	9.4	0.0	0.2	0.0	0.0	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				39.3								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
 3: PIILANI HIGHWAY & NORTH KIHEI ROAD

Future (2032) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔↔	↔	↔		↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (veh/h)	262	0	513	3	0	1	565	1559	11	3	1485	242
Future Volume (veh/h)	262	0	513	3	0	1	565	1559	11	3	1485	242
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	273	0	0	3	0	1	589	1624	0	3	1547	0
Adj No. of Lanes	2	0	2	1	1	0	2	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	0	283	47	0	42	698	2466	1070	6	1778	795
Arrive On Green	0.11	0.00	0.00	0.03	0.00	0.01	0.20	0.70	0.00	0.00	0.50	0.00
Sat Flow, veh/h	3548	0	3167	1774	0	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	273	0	0	3	0	1	589	1624	0	3	1547	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.1	0.0	0.0	0.2	0.0	0.1	15.6	24.4	0.0	0.2	36.7	0.0
Cycle Q Clear(g_c), s	7.1	0.0	0.0	0.2	0.0	0.1	15.6	24.4	0.0	0.2	36.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	0	283	47	0	42	698	2466	1070	6	1778	795
V/C Ratio(X)	0.73	0.00	0.00	0.06	0.00	0.02	0.84	0.66	0.00	0.53	0.87	0.00
Avail Cap(c_a), veh/h	373	0	283	131	0	117	815	2466	1070	75	1778	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.00	1.00	0.00	1.00	0.53	0.53	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.2	0.0	0.0	45.1	0.0	46.0	36.4	8.1	0.0	47.3	20.9	0.0
Incr Delay (d2), s/veh	6.2	0.0	0.0	0.6	0.0	0.2	4.0	0.7	0.0	25.4	6.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	0.1	0.0	0.0	7.8	12.0	0.0	0.1	19.3	0.0
LnGrp Delay(d),s/veh	47.4	0.0	0.0	45.7	0.0	46.3	40.4	8.8	0.0	72.6	27.0	0.0
LnGrp LOS	D			D			D	D	A		E	C
Approach Vol, veh/h		273			4			2213			1550	
Approach Delay, s/veh		47.4			45.8			17.2			27.1	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	70.2		6.5	22.8	51.7		14.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	56.0			5.0	22.0	38.0		8.0				
Max Q Clear Time (g_c+I), s	26.4			2.2	17.6	38.7		9.1				
Green Ext Time (p_c), s	0.0	27.7		0.0	1.1	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			23.1									
HCM 2010 LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
 4: SOUTH KIHEI ROAD & NORTH KIHEI ROAD

Future (2032) With Project
 Timing Plan: Saturday



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑↑	↖↗	↗		
Traffic Volume (veh/h)	533	427	169	524	559	255		
Future Volume (veh/h)	533	427	169	524	559	255		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	555	0	176	546	582	266		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	842	716	230	2295	751	306		
Arrive On Green	0.45	0.00	0.13	0.65	0.22	0.19		
Sat Flow, veh/h	1863	1583	1774	3632	3442	1583		
Grp Volume(v), veh/h	555	0	176	546	582	266		
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1721	1583		
Q Serve(g_s), s	13.9	0.0	5.8	3.8	9.5	9.8		
Cycle Q Clear(g_c), s	13.9	0.0	5.8	3.8	9.5	9.8		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	842	716	230	2295	751	306		
V/C Ratio(X)	0.66	0.00	0.77	0.24	0.77	0.87		
Avail Cap(c_a), veh/h	842	716	237	2295	751	306		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.75	0.75	1.00	1.00		
Uniform Delay (d), s/veh	12.8	0.0	25.2	4.4	22.1	23.5		
Incr Delay (d2), s/veh	4.0	0.0	9.4	0.2	4.6	21.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.4	1.9	5.0	6.1		
LnGrp Delay(d),s/veh	16.8	0.0	34.7	4.6	26.7	45.1		
LnGrp LOS	B		C	A	C	D		
Approach Vol, veh/h	555			722	848			
Approach Delay, s/veh	16.8			11.9	32.5			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.8	31.1				42.9		17.1
Change Period (Y+Rc), s	4.0	5.5				5.5		5.5
Max Green Setting (Gmax), s	25.4					37.4		11.6
Max Q Clear Time (g_c+I), s	15.9					5.8		11.8
Green Ext Time (p_c), s	0.0	6.0				12.8		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			21.4					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
5: PIILANI HIGHWAY & PIIKEA AVENUE

Future (2032) With Project
Timing Plan: Saturday



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	490	338	305	1710	1661	547		
Future Volume (veh/h)	490	338	305	1710	1661	547		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	500	0	311	1745	1695	0		
Adj No. of Lanes	1	1	1	2	2	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	473	422	296	2359	1652	739		
Arrive On Green	0.27	0.00	0.17	0.67	0.47	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583		
Grp Volume(v), veh/h	500	0	311	1745	1695	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583		
Q Serve(g_s), s	32.0	0.0	20.0	38.9	56.0	0.0		
Cycle Q Clear(g_c), s	32.0	0.0	20.0	38.9	56.0	0.0		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	473	422	296	2359	1652	739		
V/C Ratio(X)	1.06	0.00	1.05	0.74	1.03	0.00		
Avail Cap(c_a), veh/h	473	422	296	2359	1652	739		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	44.0	0.0	50.0	13.2	32.0	0.0		
Incr Delay (d2), s/veh	57.2	0.0	66.6	2.1	29.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh	23.2	0.0	15.2	19.4	34.0	0.0		
LnGrp Delay(d),s/veh	101.2	0.0	116.6	15.3	61.1	0.0		
LnGrp LOS	F		F	B	F			
Approach Vol, veh/h	500			2056	1695			
Approach Delay, s/veh	101.2			30.6	61.1			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		84.0		36.0	24.0	60.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		80.0		32.0	20.0	56.0		
Max Q Clear Time (g_c+l1), s		40.9		34.0	22.0	58.0		
Green Ext Time (p_c), s		30.0		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			51.1					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 6: PIILANI HIGHWAY & KAONOULU STREET

Future (2032) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	304	185	604	257	493	132	1610	648	509	1498	113
Future Volume (veh/h)	100	304	185	604	257	493	132	1610	648	509	1498	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	103	330	0	657	279	0	136	1660	0	553	1544	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	323	274	597	323	274	142	1463	654	459	1652	739
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.00	0.08	0.41	0.00	0.13	0.47	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	103	330	0	657	279	0	136	1660	0	553	1544	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	3442	1863	1583	1774	3539	1583	3442	3539	1583
Q Serve(g_s), s	7.6	26.0	0.0	26.0	21.8	0.0	11.5	62.0	0.0	20.0	61.9	0.0
Cycle Q Clear(g_c), s	7.6	26.0	0.0	26.0	21.8	0.0	11.5	62.0	0.0	20.0	61.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	323	274	597	323	274	142	1463	654	459	1652	739
V/C Ratio(X)	0.33	1.02	0.00	1.10	0.86	0.00	0.96	1.13	0.00	1.21	0.93	0.00
Avail Cap(c_a), veh/h	308	323	274	597	323	274	142	1463	654	459	1652	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.4	62.0	0.0	62.0	60.3	0.0	68.8	44.0	0.0	65.0	37.8	0.0
Incr Delay (d2), s/veh	0.6	55.8	0.0	67.7	20.8	0.0	62.7	69.7	0.0	111.4	11.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	18.4	0.0	18.0	13.1	0.0	8.1	44.4	0.0	16.6	32.8	0.0
LnGrp Delay(d),s/veh	55.0	117.9	0.0	129.7	81.1	0.0	131.5	113.7	0.0	176.4	49.1	0.0
LnGrp LOS	E	F		F	F		F	F		F	D	
Approach Vol, veh/h		433			936			1796			2097	
Approach Delay, s/veh		102.9			115.2			115.0			82.7	
Approach LOS		F			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	34.0	66.0		30.0	16.0	74.0		30.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	20.0	62.0		26.0	12.0	70.0		26.0				
Max Q Clear Time (g_c+20), s	20.0	64.0		28.0	13.5	63.9		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				101.2								
HCM 2010 LOS				F								

HCM 2010 Signalized Intersection Summary
 7: SOUTH KIHEI ROAD & KAONOULU STREET

Future (2032) With Project
 Timing Plan: Saturday



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	226	113	832	284	129	839		
Future Volume (veh/h)	226	113	832	284	129	839		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	246	123	904	309	140	912		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	278	248	854	292	142	1421		
Arrive On Green	0.16	0.16	0.64	0.64	0.08	0.76		
Sat Flow, veh/h	1774	1583	1329	454	1774	1863		
Grp Volume(v), veh/h	246	123	0	1213	140	912		
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1783	1774	1863		
Q Serve(g_s), s	13.5	7.1	0.0	64.0	7.8	22.6		
Cycle Q Clear(g_c), s	13.5	7.1	0.0	64.0	7.8	22.6		
Prop In Lane	1.00	1.00		0.25	1.00			
Lane Grp Cap(c), veh/h	278	248	0	1145	142	1421		
V/C Ratio(X)	0.88	0.50	0.00	1.06	0.98	0.64		
Avail Cap(c_a), veh/h	285	254	0	1145	142	1421		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	41.1	38.4	0.0	17.8	45.7	5.5		
Incr Delay (d2), s/veh	26.0	1.5	0.0	43.7	69.9	2.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	18.6	3.2	0.0	45.1	6.6	12.3		
LnGrp Delay(d),s/veh	67.1	39.9	0.0	61.5	115.6	7.7		
LnGrp LOS	E	D		F	F	A		
Approach Vol, veh/h	369		1213			1052		
Approach Delay, s/veh	58.1		61.5			22.1		
Approach LOS	E		E			C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	62.0	68.0				80.0		19.6
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	64.0	64.0				76.0		16.0
Max Q Clear Time (g_c+I), s	66.0	66.0				24.6		15.5
Green Ext Time (p_c), s	0.0	0.0				23.4		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			45.3					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
 8: PIILANI HIGHWAY & KULANIHAKOI STREET

Future (2032) With Project
 Timing Plan: Saturday



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↕	↗	↗	↕↕	↗
Traffic Volume (veh/h)	129	0	75	0	0	0	50	2294	0	0	2122	135
Future Volume (veh/h)	129	0	75	0	0	0	50	2294	0	0	2122	135
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	136	0	0	0	0	0	53	2415	0	0	2234	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.95	0.92	0.95	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	0	183	0	215	183	68	2815	1260	2	2523	1129
Arrive On Green	0.12	0.00	0.00	0.00	0.00	0.00	0.04	0.80	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1412	0	1583	0	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	136	0	0	0	0	0	53	2415	0	0	2234	0
Grp Sat Flow(s),veh/h/ln	1412	0	1583	0	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.5	0.0	0.0	0.0	0.0	0.0	2.7	39.5	0.0	0.0	44.2	0.0
Cycle Q Clear(g_c), s	8.5	0.0	0.0	0.0	0.0	0.0	2.7	39.5	0.0	0.0	44.2	0.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	0	183	0	215	183	68	2815	1260	2	2523	1129
V/C Ratio(X)	0.56	0.00	0.00	0.00	0.00	0.00	0.78	0.86	0.00	0.00	0.89	0.00
Avail Cap(c_a), veh/h	331	0	281	0	331	281	79	2815	1260	79	2523	1129
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	38.9	0.0	0.0	0.0	0.0	0.0	42.9	5.9	0.0	0.0	10.1	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.0	0.0	0.0	34.8	3.6	0.0	0.0	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	0.0	0.0	0.0	2.0	20.2	0.0	0.0	22.9	0.0
LnGrp Delay(d),s/veh	41.0	0.0	0.0	0.0	0.0	0.0	77.7	9.6	0.0	0.0	15.1	0.0
LnGrp LOS	D						E	A			B	
Approach Vol, veh/h		136			0			2468			2234	
Approach Delay, s/veh		41.0			0.0			11.0			15.1	
Approach LOS		D						B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	75.6		14.4	7.4	68.2		14.4				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	58.0			16.0	4.0	58.0		16.0				
Max Q Clear Time (g_c+I), s	41.5			10.5	4.7	46.2		0.0				
Green Ext Time (p_c), s	0.0	16.1		0.3	0.0	11.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			13.7									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 22.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	37	430	22	54	368	70	21	10	55	124	8	17
Future Vol, veh/h	37	430	22	54	368	70	21	10	55	124	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	50	-	-	40	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	494	25	62	423	80	24	11	63	143	9	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	503	0	0	520	0	0	1194	1220	507	1216	1192	463
Stage 1	-	-	-	-	-	-	592	592	-	587	587	-
Stage 2	-	-	-	-	-	-	602	628	-	629	605	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1061	-	-	1046	-	-	163	180	566	158	187	599
Stage 1	-	-	-	-	-	-	493	494	-	496	497	-
Stage 2	-	-	-	-	-	-	486	476	-	470	487	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1061	-	-	1046	-	-	140	162	566	~ 123	169	599
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	162	-	~ 123	169	-
Stage 1	-	-	-	-	-	-	473	474	-	476	468	-
Stage 2	-	-	-	-	-	-	434	448	-	391	467	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	1	20.7	168.1
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	140	409	1061	-	-	1046	-	-	123	330
HCM Lane V/C Ratio	0.172	0.183	0.04	-	-	0.059	-	-	1.159	0.087
HCM Control Delay (s)	36	15.8	8.5	-	-	8.7	-	-	198.6	16.9
HCM Lane LOS	E	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.6	0.7	0.1	-	-	0.2	-	-	8.6	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	2.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	45	447	14	21	360	22	8	1	22	22	7	70
Future Vol, veh/h	45	447	14	21	360	22	8	1	22	22	7	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	175	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	497	16	23	400	24	9	1	24	24	8	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	424	0	0	512	0	0	1106	1075	504	1076	1071	412
Stage 1	-	-	-	-	-	-	604	604	-	459	459	-
Stage 2	-	-	-	-	-	-	502	471	-	617	612	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1135	-	-	1053	-	-	188	220	568	197	221	640
Stage 1	-	-	-	-	-	-	485	488	-	582	566	-
Stage 2	-	-	-	-	-	-	552	560	-	477	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1135	-	-	1053	-	-	153	206	568	178	207	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	206	-	178	207	-
Stage 1	-	-	-	-	-	-	464	467	-	556	554	-
Stage 2	-	-	-	-	-	-	468	548	-	435	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.4	17.5	18.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	1135	-	-	1053	-	-	371
HCM Lane V/C Ratio	0.107	0.044	-	-	0.022	-	-	0.296
HCM Control Delay (s)	17.5	8.3	-	-	8.5	-	-	18.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	1.2



APPENDIX N
Conditions of Motion to Amend with Proposed
Changes

Below is a list of the existing conditions in the 1995 Decision and Order that would be included in the new Findings of Fact, Conclusions of Law and Decision and Order and would apply only to the Piilani Parcels, as sought by Applicant in the Motion to Amend.

1. 1995 Condition 1:

“The Petitioner shall obtain a Community Plan Amendment and Change in Zoning from the county of Maui.”

Request for Modification or Deletion of Condition 1:

Piilani requests that Condition 1 be deleted.

Following the issuance of the 1995 Decision and Order, in 1998, the Original Petitioner applied to the County of Maui for a change in zoning from Agricultural to M-1 Light Industrial, and the Original Petition Property was rezoned to M-1 Light Industrial in 1999 without any limitation on uses. M-1 Light Industrial Zoning permits all of the proposed uses in the Piilani Project. In addition, as anticipated at the time the Original Petition was presented, the County of Maui adopted the current KMCP in 1998 by Ordinance 2641, effective March 6, 1998. The adoption of the KMCP changed the designation from Project District 3, allowing a mixture of single family and multi-family uses, to the current designation of Light Industrial (LI). As noted *supra*, it is the County of Maui’s position that the current designation of “Light Industrial” in the Kihei-Makena Community Plan permits all of the proposed uses in the Piilani Project. Therefore, because this condition has been met, and because the uses proposed in

the Piilani Project all are allowed within the LI designation as implemented by the M-1 zoning, no community plan amendment is necessary.

2. 1995 Condition 2:

Petitioner shall cooperate with the State Department of Health and the County of Maui Department of Public Works and Waste Management to conform to the program goals and objectives of the Integrated Solid Waste Management Act, Chapter 342G, Hawaii Revised Statutes.

Request for Modification or Deletion:

Piilani requests that the name of the agency “County of Maui Department Environmental Management” be substituted for the name “County of Maui Department of Public Works and Waste Management” to reflect the change of County of Maui governmental agencies responsible for solid waste and waste water within the County of Maui.

3. 1995 Condition 3:

Petitioner shall contribute its pro-rata share to fund and construct adequate wastewater treatment, transmission and disposal facilities, as determined by the State Department of Health and the County of Maui Department of Public Works and Waste Management.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 3.

4. 1995 Condition 4:

Petitioner shall fund and construct adequate civil defense measures as determined by the State and County Civil Defense Agencies.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 4.

5. 1995 Condition 5:

Petitioner shall fund, design and construct necessary local and regional roadway improvements necessitated by the proposed development in designs and schedules accepted by the State Department of Transportation and the County of Maui. Petitioner shall provide traffic signals at the intersection of Piilani Highway and Kaonoulu Street, and shall submit a warrant study in coordination with the Department of Transportation. Petitioner shall also install a fence and appropriate screening, i.e., landscaping, etc., along the highway right-of-way in coordination with the State Department of Transportation. Petitioner shall provide for a frontage road parallel to Piilani Highway and other connector roads within the Petition area, in coordination with other developments in the area with the review and approval of the State Department of Transportation and the County of Maui.

Request for Modification or Deletion:

Piilani requests that the following language be deleted from Condition 5:

“Petitioner shall provide for a frontage road parallel to Piilani Highway and other connector roads within the Petition area, in coordination with other developments in the area with the review and approval of the State Department of Transportation and the County of Maui.” According to testimony of Ken Tatsuguchi of the State Department of Transportation (“SDOT”) at the Order to Show Cause hearing, as well as the testimony of Piilani’s expert Phillip Rowell at

the Order to Show Cause hearing, a frontage road adjacent to Piilani Highway would result in the Piilani Highway and Kaonoulu Street intersection being in close proximity to the frontage road causing traffic operation and safety issues. A frontage road would create a new intersection with East Kaonoulu Street less than a desirable distance east of Piilani Highway, making coordination of signals difficult and likely leading to traffic backups onto Piilani Highway and interference with traffic flow. It was the SDOT's opinion that a frontage road parallel to Piilani Highway at the Kihei Upcountry Highway intersection would not be feasible. Appropriate local accesses from the Piilani Parcels to the State Highway System will be addressed in the TIAR without the necessity of frontage roads. Therefore, Piilani requests the deletion of the requirement of a frontage road, which according to the experts at the SDOT is not feasible or desirable.

6. 1995 Condition 6:

Petitioner shall fund and construct adequate potable and non-potable water source, storage, and transmission facilities and improvements to accommodate the proposed project. Water transmission facilities and improvements shall be coordinated and approved by the appropriate State and County agencies.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 6.

7. 1995 Condition 7:

Petitioner shall participate in an air quality monitoring program as determined by the State Department of Health.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 7.

8. 1995 Condition 8:

Petitioner shall fund the design and construction of its pro-rata share of drainage improvements required as a result of the development of the Property, including oil water separators and other filters as appropriate, and other best management practices as necessary to minimize non-point source pollution into Kulanihako'i Gulch, in coordination with appropriate state and county agencies, such as the following:

a. All cleaning, repairs and maintenance of equipment involving the use of industrial liquids, such as gasoline, diesel, solvent, motor oil, hydraulic oil, gear oil, brake fluid, acidic or caustic liquids, antifreeze, detergents, degreasers, etc., shall be conducted on a concrete floor, where roofed or unroofed. The concrete floor shall be constructed so as to be able to contain any drips or spills and to provide for the recovery of any spilled liquid. Water drainage from these concrete floors, if necessary, shall pass through a separator sump before being discharged.

b. All employees shall be instructed to immediately collect and contain any industrial liquid spills on the concrete floor and should be informed against discharging or spilling any industrial liquids. Employees shall be instructed to prevent any industrial liquid spills onto the bare ground.

c. Barrels for the temporary storage of used oil or other industrial liquids shall be kept on a concrete surface. The surface shall be bermed to prevent the loss of liquid in the event of spills or leaks. The barrels shall be

sealed and kept under shelter from the rain. (The Department of Labor and Industrial Relations' Occupational Safety and Health regulations, sections titles, "Housekeeping Standards" and "Storage of Flammable or Combustible Liquids," shall be followed, along with the local fire code.)

Request for Modification or Deletion:

Piilani requests that the term "Property" be deleted and replaced with "Piilani Parcels" to indicate the applicability of this condition solely to the Piilani Project. Piilani does not seek any further modification or deletion of Condition 8.

9. 1995 Condition 9:

Should any human burials or any historic artifacts, charcoal deposits, or stone platforms, pavings or walls be found, the Petitioner shall stop work in the immediate vicinity and contact the State Historic Preservation District. The significance of these finds shall be determined and approved by the Division, and an acceptable mitigation plan shall be approved by the Division. The Division must verify that the fieldwork portion of the mitigation plan has been successfully executed prior to work proceedings in the immediate vicinity of the find. Burials must be treated under specific provisions of Chapter 6E, Hawaii Revised Statutes.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 9.

10. 1995 Condition 10:

A long term preservation plan for the petroglyph stone (Site 50-10-3746) that was removed from the project area shall be reviewed and approved by the State Historic Preservation Division. Long term preservation measures shall be implemented within 60 days after final approval of the preservation plan.

Request for Modification or Deletion:

Piilani request that this condition be deleted because it has already been satisfied. As stated in the Fifth Annual Report (submitted on February 11, 2000), the Petitioner prepared a long term preservation plan which has been approved by the State Historic Preservation Division, Department of Land and Natural Resources, State of Hawaii, a copy of which was transmitted to the Land Use Commission. See Exhibit "O," Letter from the State Historic Preservation Division, dated June 2, 1998.

11. 1995 Condition 11:

Petitioner shall contribute its pro-rata share to a near shore water quality monitoring program as determined by the State Department of Health and the State Division of Aquatic Resources, Department of Land and Natural Resources.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 11.

12. 1995 Condition 12:

Petitioner shall implement effective soil erosion and dust control methods during construction in compliance with the rules and regulations of the State Department of Health and the County of Maui.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 12.

13. 1995 Condition 13:

Petitioner shall create a buffer zone between lands designated as SF (Single-Family) by the County's Kihei-Makena Community Plan and industrial uses on the Property to mitigate impacts between future residential activities and the proposed industrial development.

Request for Modification or Deletion:

Piilani requests that Condition 13 be deleted, because the KMCP does not have any lands designated Single-Family (SF) that are adjacent to the Piilani Parcels, and therefore this condition is not necessary.

14. 1995 Condition 14:

In the event Petitioner sells its interest in the Project, Petitioner shall subject the Property to deed restrictions to run with the land which shall require the successors and assigns to comply with the terms and conditions set forth in the Commission's Decision and Order.

Request for Modification or Deletion:

Piilani requests that the term "Property" be deleted and replaced with "Piilani Parcels" to indicate the applicability of this condition solely to the Piilani Project.

15. 1995 Condition 15:

Petitioner shall develop the Property in substantial compliance with the representatives made to the Commission. Failure to so develop the Property may

result in reversion of the Property to its former classification, or change to a more appropriate classification.

Request for Modification or Deletion:

Piilani requests that the term “Property” be deleted and replaced with “Piilani Parcels” to indicate the applicability of this condition solely to the Piilani Project.

16. 1995 Condition 16:

Petitioner shall give notice to the Commission of any intent to sell, lease, assign, place in trust, or otherwise voluntarily after the ownership interests in the Property, prior to development of the Property.

Request for Modification or Deletion:

Piilani requests that the term “Property” be deleted and replaced with “Piilani Parcels” to indicate the applicability of this condition solely to the Piilani Project.

17. 1995 Condition 17:

Petitioner shall timely provide without any prior notice, annual reports to the Commission, the Office of State Planning, and the County of Maui Planning Department in connection with the status of the subject Project and Petitioner’s progress in complying with the conditions imposed herein. The annual report shall include written documentation from each State and County agency responsible, indicating that the terms of the condition(s) are progressing satisfactorily or have been completed to the satisfaction of the agency. The

annual report shall be submitted in a form prescribed by the Executive Officer of the Commission.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 17.

18. 1995 Condition 18:

Petitioner shall record the conditions imposed herein by the Commission with the Bureau of Conveyances pursuant to Section 15-15-92 Hawaii Administrative Rules.

Request for Modification or Deletion:

Piilani does not seek any modification or deletion of Condition 18.

19. 1995 Condition 19:

Within seven (7) days of the issuance of the Commission's Decision and Order for the subject reclassification, Petitioner shall (a) record with the Bureau of Conveyances a statement that the Property is subject to conditions imposed herein by the Land Use Commission in the reclassification of the Property; and (b) shall file a copy of such recorded statement with the Commission.

Request for Modification or Deletion:

Piilani requests that the term "Property" be deleted and replaced with "Piilani Parcels" to indicate the applicability of this condition solely to the Piilani Project.

20. 1995 Condition 20:

The Commission may fully or partially release the conditions provided herein as to all or any portion of the Property upon timely motion and upon the provision of adequate assurance of satisfaction of these conditions by the Petitioner.

Request for Modification or Deletion:

Piilani requests that the term "Property" be deleted and replaced with "Piilani Parcels" to indicate the applicability of this condition solely to the Piilani Project.